Treatment of a Deep Bite with Bilateral Palatally Impacted Maxillary Canines
Drs. Irene Yi-Hung Shih, John Jin-Jong Lin & W. Eugene Roberts

Class III Malocclusion with Camouflage Treatment and Implant Site Development
Drs. Ariel Chang, Chris Chang & W. Eugene Roberts

Crowding, Protrusion and Scissors Bite: Extractions and Extra-Alveolar Bone Screws
Drs. Hui-Hwa Chen, Chris Chang & W. Eugene Roberts

Simplified Open-window Technique for a Horizontally Impacted Maxillary Canine with a Dilacerated Root
Drs. Ariel Chang, Chris Chang & W. Eugene Roberts

IJOI

International Journal of Orthodontics & Implantology

Vol. 39 July 1, 2015

A beautiful lady by Luis Bolumar, a renowned Spanish painter. Her sexy or bimaxillary protrusive lips are an excellent example of the subjectivity of beauty.

International Journal of Orthodontics & Implantology is an experience sharing magazine for worldwide orthodontists and Implantologists. Download it at *http://iaoi.pro.*

《僅供牙科專業人士參閱》

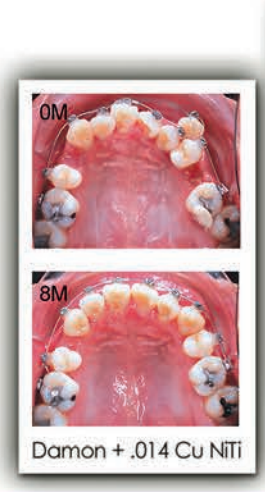
2015~2016 熱愛學矯正

張慧男 博士

新竹貝多芬齒顎矯正中心負責人
中華民國齒顎矯正專科醫師
美國齒顎矯正專科醫師學院院士（ABO）
美國印地安那普渡大學齒顎矯正研究所博士

學會開始做矯正需多久?

39小時讓您入門矯正。本課程採高效學習法及高效矯正簡報法 - Keynote，在舒適、輕鬆的環境下，學會簡單有效的矯正方法，教室與診間結合，讓您現學現用，立即熟悉各種習得的技巧，而不需太多課後複習。全程以 In-Office Training 方式，用病例帶動分析、診斷，治療計畫與療程技巧，每一步驟皆以圖片及影片教學，讓您很難錯失任何環節，更沒有聽不清楚或無法理解的可能。為提高課後自我學習及臨床印證之效率，另備有教學電子檔，供學員家中研習。我們的終極目標是：用最短時間、最輕鬆的方式，讓每位學員 - *熱愛矯正學、熱愛學矯正。*



Damon + .014 Cu NiTi

Damon Clear

Damon矯正課程

【課程】9:00 - 12:00
【實習】另外安排

使用最新一代矯正器 Damon Q 進行課程，歡迎舊生報名參加。

	台北 (二)	高雄 (四)	2016 台中 (四)	LECTURE	LAB
1	10/13/15'	5/7/15'	5/5/16'	理想入門病例+Damon Q黏著	Bonding (Damon Q) + BT
2	10/20	5/14	5/19	快速矯正療程四部曲	Ceph + Photo
3	11/3	5/21	5/26	簡捷有效的錨定系統	Damon + OrthoBoneScrew I
4	11/24	6/25	6/16	不拔牙與拔牙分析	Damon + OrthoBoneScrew II
5	12/15	7/16	6/23	Damon 診斷流程及微調	Finish Bending
6	12/22	7/30	6/30	完工檢測及報告示範	Fixed Retainer (FR)
7	12/29	8/13	7/7	維持及復發；病例示範	Presentation Demo
8	1/5/16'	8/27	7/21	矯正力學及診斷分析 (1)	DDX + Case Reports I
9	1/12	9/17	7/28	軟硬組織及診斷分析 (2)	DDX + Case Reports II
10	1/19	9/24	8/11	兒童矯正及診斷分析 (3)	DDX + Case Reports III
11	2/2	11/19	8/25	成人矯正及診斷分析 (4)	DDX + Case Reports IV

矯正植體課程

【課程】 9:00 - 12:00
【實習】13:30 - 20:00

矯正植體的操作時機、植法與實習、個案討論、臨床跟診及實作示範。

新竹(五) 11/6'15 (含午、晚餐)

Damon + Bite Turbo + Early Light Short Elastic

International workshop

Keynote & managment
OrthoBoneScrew & Damon

2015	
亞洲B班	10/29 -30
英文B班	12/1 -3
2016	
英文A班	4/26 -29
英文B班	10/18 -21
馬國A班	9/22 -24
馬國B班	12/8 -10

矯正進階課程

【新竹】 9:00 - 12:00

以病例討論為主軸，培養學員如何正確診斷及快速排除臨床疑點，課程中亦訓練每位學員善用 Keynote。

	新竹 (二)	Paper Reviews	Topics & Case Demo
1	9/15/15'	Bracket Placement	Crowding: Ext. vs. Non-ext.
2	9/22	Impacted Canines	Upper Impacted Teeth
3	12/1	Canine Substitution	Lower Impacted Teeth
4	2/16/16'	Missing 2nd Premolar	Missing: Ant. vs. Post.
5	3/1	DI Workshop	Crossbite: Ant. vs. Post.
6	3/22	CRE Workshop	Open Bite High Angle
7	3/29	Excellence in Finishing (occlusion)	Deep Bite Low Angle
8	4/5	Excellence in Finishing (esthetics & perio)	Gummy Smile & Canting
9	4/19	Ortho-Perio-Restore Connection	Esthetic Finishing (Transposition)
10	4/26	Adjunct to Perio	Implant-Ortho
11	5/3	Unhappy Patient	IDT - Adult Complex

助理訓練課程

【課程】10:00 - 14:30
【實習】15:00 - 20:00

每梯次共兩堂課程與技術操作，內含照相技術、Morph 與公關衛教之電腦資料處理；另安排一次診所見習。

新竹(五) 10/2、16'15 (含午、晚餐)

矯正精修課程

【課程】9:00 - 12:00

協助每位學員了解由古典到現代之文獻，進而應用於實際病例；並藉由DI及CRE讓精緻完工（Excellent Finishing）變成易達到的目標。

新竹 (二) 精修VII
2015/6/16 7/7 8/11 9/8 10/27 11/17 12/8
2016/3/15 4/12 5/10 6/14

課程資訊

上課地點

【台北】
犇亞會議中心
/ 台北市復興北路99號15樓
(捷運文湖線 南京復興站旁)

【新竹】
金牛頓藝術科技公司
/ 新竹市建中一路25號2樓

【台中】
中國文化大學台中教育中心
/ 台中市西屯區臺灣大道三段658號3樓（Rich 19 大樓）

【高雄】
國立科學工藝博物館-南館
/ 高雄市三民區九如一路797號
(107研討室)

報名專線

湧傑 Yong Chieh

北區
(02) 27788315
楊文君 分機#122

中區
(04) 23058915 張馨云

南區
(07) 2260030 王慧靜

＊每次上課請依最新一期 IJOI 公告為主

Beauty is in the eye of the beholder.

This edition's cover is rather unusual for an Orthodontic journal, isn't it?

Following a recent lecture in Spain, I was invited to visit a famous art gallery, where I became absolutely fascinated by the uniqueness of the great Spanish artist Luis Bolumar, whose work is featured on the cover. The first things that attracted me were the unconventional eye shape and "*Avatar*" skin color, and also that the artist had quite unusually painted teeth, with a very fine smile arc.

Accompanied by a fellow professional, Dr. Fernando, our conversation soon turned to dentistry and I remarked that the lips were too protrusive, but could be easily remedied by extracting 4 bicuspids, in order to retract the front teeth and to reposition the lips. "*No, no, no, no!*" replied my Spanish friend. "*We love sexy lips!*" This was not the first time I have heard Caucasian doctors talking about sexy lips and this has always had me slightly confused.

I also met the famous speaker Dr. Ramon in Spain, who had recently been invited to speak about lip profile in Shanghai. Prior to his lecture he visited a night market and noticed many thick protrusive lips (*in need of 4 bicuspid extractions*) and he realised that none of his case reports actually covered this and was concerned that his topic would not be appropriate for oriental doctors and their patients. Obviously different races have different profiles and esthetics.

Both these stories have given me a deeper understanding of cultural and physical differences and the need to think about how different people perceive these. It's very subjective!

Most of the cases presented in IJOI are Asian patients being treated by Asian doctors, based on Asian esthetics. Most orthodontic literature is based on Caucasian cases, so as the publisher, I sincerely hope that IJOI can add to the orthodontic database and help bridge this cultural divide and allow a better understanding for all cultures.

I hope that readers of and contributors to IJOI can relate to this and join us as we continue on our path to glory.

Chris Chang DDS, PhD, Publisher of IJOI.


Examiner
Dr. W. Eugene Roberts


Examiner
Dr. Tom Pitts


Examiner
Dr. John J. J. Lin


Consultant
Dr. Frederick J. Regennitter


Consultant
Dr. Tucker Haltom


Consultant
Dr. J. Michael Steffen


Consultant
Dr. Larry White


Examiner
Dr. Thomas Han


Examiner
Dr. Kwang Bum Park


Examiner
Dr. Homa Zadeh


Examiner
Dr. Fernando Rojas-Vizcaya


Consultant
Dr. Baldwin W. Marchack


Consultant
Dr. Stephen Wallace


Consultant
Dr. Mark Y. K. Ou


Guest Editor
Dr. Rungsi Thavarungkul

iAOI
Editorial Team >>

Contributors (left to right) :
Dr. Hong Po Chang, *Consultant*
Dr. Ming Guey Tseng, *Consultant*
Dr. John Lin, *Consultant*
Dr. Frank Chang, *Consultant*
Dr. Johnny Liaw, *Consultant*
Dr. Chris Chang, *Publisher*

Treatment of a Deep Bite with Bilateral Palatally Impacted Maxillary Canines

Abstract

Impacted maxillary canines is a common malocclusion. A 14 year female presented with a Class I deep bite malocclusion, complicated with impacted maxillary canines, bilaterally. The right maxillary primary canine was retained. The Discrepancy Index (DI) for the malocclusion was 15, but 16 points were added for the difficult position of the impactions, resulting in a total DI of 31. Extraction of the primary canine prior to orthodontics treatment helped the axial inclination and position of the right impacted canine. After opening up space for the upper canines, surgical exposure was performed by a periodontist to remove the soft tissue and bone covering the crowns of the impactions to permit spontaneous eruption of the impactions. A cone-beam computed tomography (CBCT) image was obtained immediately prior to the surgery to provide accurate localization of the impactions relative to the adjacent teeth. Glass ionomer-cement bite turbos (GIBT) were bonded on the upper central incisors to open the bite at the beginning of active treatment. To allow the cuspids to pass out of crossbite, GIBTs were placed on the mandibular first molars and the bite turbos on the upper central incisors were removed. The patient's dentition was well aligned as evidenced by a Cast Radiograph Evaluation (CRE) of 18. The overall treatment time was 31 mo. Opening the bite with GIBTs is beneficial for patients with low to average divergency of the jaws, and competent lips. (Int J Orthod Implantol;39:4-19)

Key words:

Palatally impacted maxillary canines, surgical exposure, spontaneous eruption, CBCT, deep bite, Glass Ionomer Bite Turbos (GIBT)

History and Etiology

A 14 year-old female presented with bilateral unerupted maxillary canines and an over retained upper right primary canine (*Figs. 1-3*). Both medical and dental histories were noncontributory. The Discrepancy Index (*DI*) for the malocclusion was 15 using the American Board of Orthodontics (*ABO*) method. In addition, the difficult positions of the impactions scored an additional 16 points, resulting in an overall DI of 31. The scoring worksheets are at the end of this case report.

After a 2-year-and-7-months (*31 months*) of active treatment, the patient was corrected to a near ideal result (*Figs. 4-6*), with an ABO Cast Radiograph Evaluation (*CRE*) of 20. Pre-treatment and post-treatment cephalometric and panoramic radiographs document the corrected angulation and position of the upper canines after the treatment (*Figs. 7 and 8*). Cephalometric superimpositions reveal excessive growth in the mandible compared to the maxilla, which contributed to a Class III facial profile (*Fig. 9*). The photographic summary of the orthodontic treatment procedures is documented

Dr. Irene Yi-Hung Shih,
Visiting Staff, Beauty Forever Dental Clinic (left)

Dr. John Jin-Jong Lin
MS, Marquette University Chief Consultant of IJOI President of TAO (2000~2002)
Author of Creative Orthodontics (middle)

W. Eugene Roberts,
Chief editor, International Journal of Orthodontics & Implantology (right)

Fig. 1: Pre-treatment facial photographs

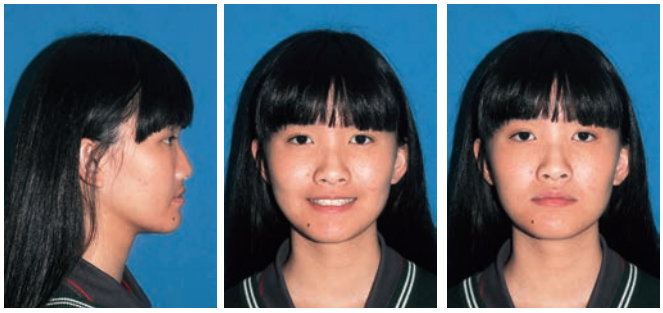


Fig. 4: Post-treatment facial photographs

Fig. 2: Pre-treatment intraoral photographs

Fig. 5: Post-treatment intraoral photographs

Fig. 3: Pre-treatment study models (casts)

Fig. 6: Post-treatment study models (casts)

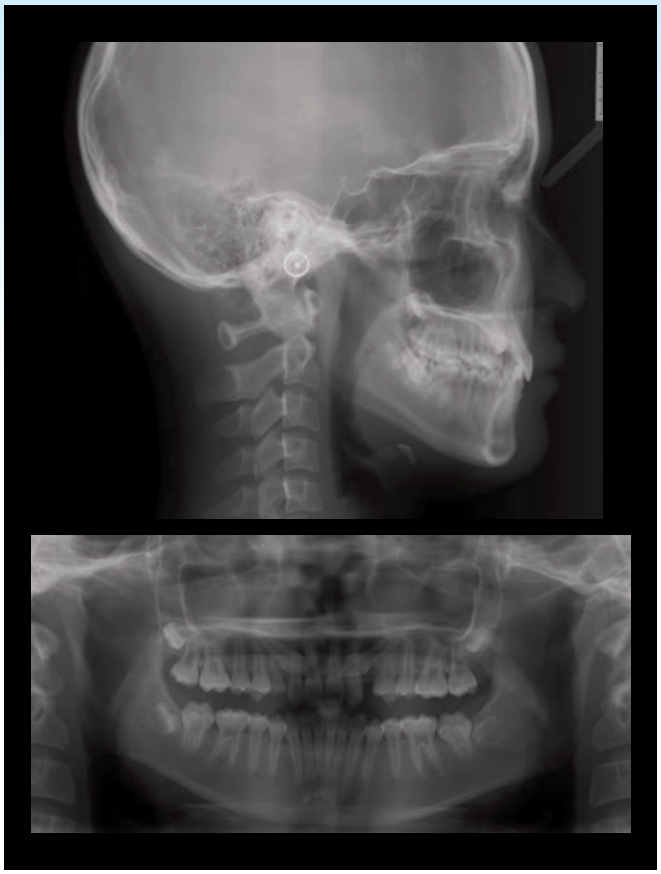


Fig. 7:
Pre-treatment cephalometric and panoramic radiographs

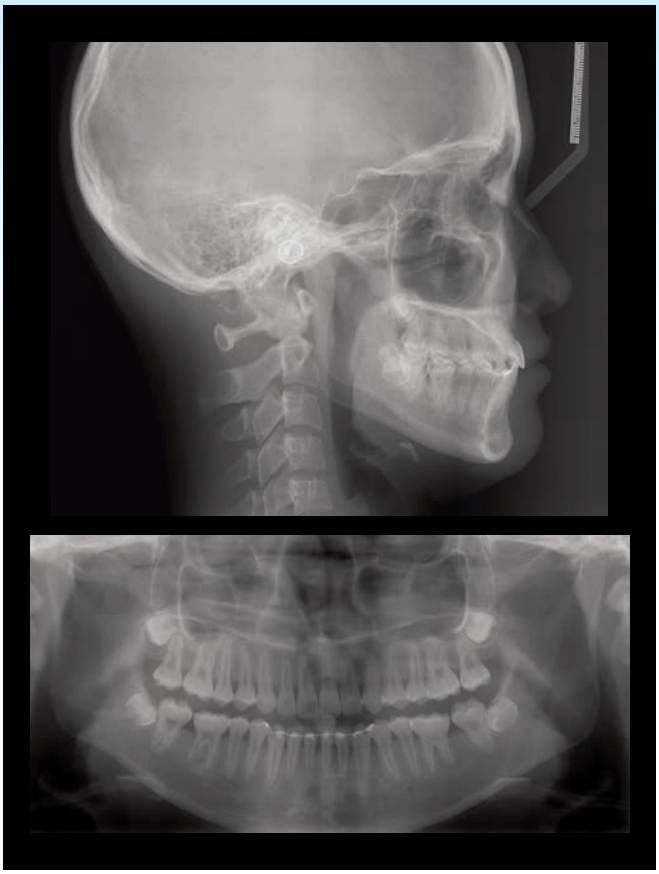


Fig. 8:
Post-treatment cephalometric and panoramic radiographs

Fig. 9:
Pre-treatment (black) and post-treatment (red) cephalometric tracings are superimposed on the anterior cranial base (left), maxilla (upper right) and mandible (lower right).

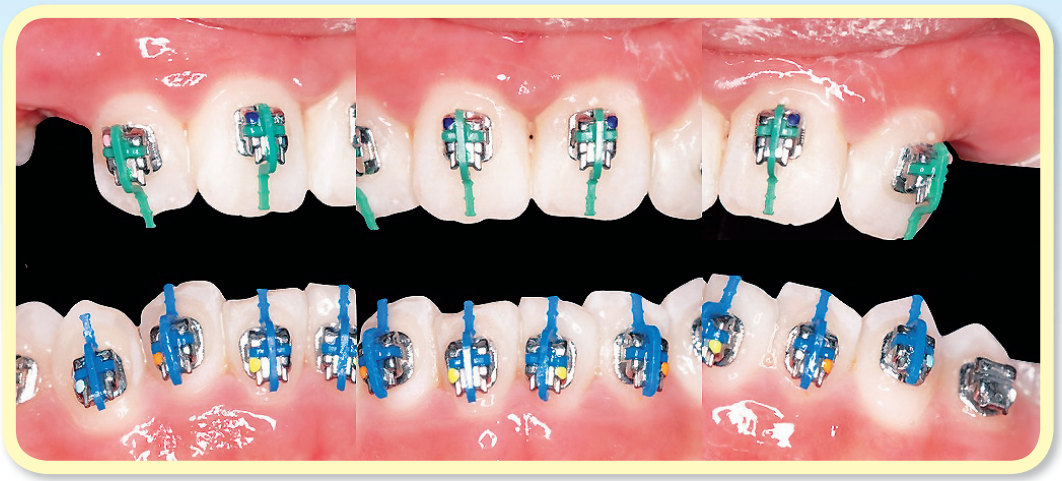


Fig. 10:
Bracket prescription: Low torque brackets on upper anteriors to get better torque control when opening space for the impacted canines. Standard torque was used on the lower anteriors.

in Figures 10-17. These procedures will be discussed in detail after a discussion of the special imaging and surgical requirements for the efficient recovery of maxillary canine impactions (*Figs. 18-22*). The particular attention to proclination and intrusion of the maxillary incisors to flatten the smile-arc is illustrated in Fig. 23.

Pretreatment, the maxillary impacted canines were distinctly palpated in the palate, but confirming the definitive positions of the impactions, relative to the adjacent teeth, required CBCT imaging (*Fig. 18*). In the absence of obvious anomalies and pathology in the maxillary arch, the etiology of the impactions was deemed to be abnormal paths of eruption.[1,2] Surgical exposure was performed to uncover the impacted canines and remove bone from the planned path of extrusion. Six weeks after exposure, the maxillary cuspids erupted spontaneously, with sufficient crown exposure to permit the bonding of brackets (*Fig. 22*).

Diagnosis

Skeletal:

- Skeletal Class I (*SNA 83.9°, SNB 84.1°, ANB -0.2°*)
- Average mandibular plane angle (*SN-MP 29.6°, FMA 24.0°*)

Dental:

- Bilateral Class I molar relationship
- Overjet 2 mm
- Deep over bite >100% of lower incisor crown length (*8 mm*)
- 2 mm space deficiency in the upper arch
- 3.5 mm space deficiency in the lower arch
- Four developing wisdom teeth
- Upper dental midline was coincident with the facial midline; lower dental midline shifted to right ~1 mm
- Arch forms: *symmetrical tapering ovoid shape in the maxilla and the mandible*

Facial:

- Straight profile
- Acute nasolabial angle
- Vertical facial proportions are within normal limits (*WNL*)
- Chin point slightly deviates to right

The ABO Discrepancy Index (*DI*) is 15, but 16 points were added for the difficult position of the impactions, for an overall DI of 31. See the subsequent worksheets for details

Treatment Objectives

Maxilla (*all three planes*):

- A – P: *Allow for normal expression of growth*
- Vertical: *Allow for normal expression of growth*
- Transverse: *Maintain*

Mandible (*all three planes*):

- A – P: *Allow for normal expression of growth*
- Vertical: *Open slightly*
- Transverse: *Maintain*

Maxillary Dentition:

- A – P: *Maintain*
- Vertical: *Slightly intrude upper incisors*
- Transverse: *Expand*

Mandibular Dentition:

- A – P: *Maintain*

CEPHALOMETRIC			
SKELETAL ANALYSIS			
	PRE-Tx	POST-Tx	DIFF.
SNA°	83.9°	83.1°	-0.8°
SNB°	84.1°	83.9°	-0.2°
ANB°	-0.2°	-0.8°	-0.6°
SN-MP°	29.6°	29.5°	-0.1°
FMA°	24.0°	24.1°	0.1°
DENTAL ANALYSIS			
U1 TO NA mm	4.2 mm	7.0 mm	2.8 mm
U1 TO SN°	98.3°	118.3°	20.0°
L1 TO NB mm	0.0 mm	3.1 mm	-3.1 mm
L1 TO MP°	70.1°	85.3°	15.2°
FACIAL ANALYSIS			
E-LINE UL	-1.0 mm	-3.2 mm	-2.2 mm
E-LINE LL	-0.7 mm	-0.7 mm	0.0 mm

■ Table 1: Cephalometric summary

- Vertical: *Maintain*
- Transverse: *Expand*

Facial Esthetics:

- Maintain

Treatment Plan

A non-extraction treatment approach with a full fixed orthodontic appliance was planned to align and level both arches. Low torque brackets were selected for the upper anteriors to prevent excessive flaring. An open window technique was planned to uncover the impacted canines, utilizing CBCT images for determining the precise position and orientation relative to adjacent teeth.

Appliances and Treatment Progress

The upper right primary canine was extracted prior to the surgical uncovering of the impactions. A full fixed .022" Damon Q® passive self-ligating (*PSL*) appliance (*Ormco, Glendora, CA*) was installed. Standard brackets were used for the lower arch, and low torque brackets were used on the upper incisors to prevent excessive flaring, when space was opened for the impacted canines (*Fig. 10*). The initial archwires were .014" CuNiTi on both arches. The deep bite was opened with GIBT (*Glass Ionomer Bite Turbos*) bonded on the lingual surfaces of the upper central incisors (*Fig. 11*). Starting from the 2nd month of treatment, cross arch elastics were placed from the lingual surfaces of the lower second premolars and first molars to the buccal side of the upper first premolars and first molars to decrease the buccal overjet and upright the lower posterior teeth.

The archwire sequence progressed to .014x.025" CuNiTi in three months. During arch alignment open coil springs were installed to open space for the impacted canines (*Fig. 12*). In the 7th month of treatment, the patient was referred to a periodontist for surgical exposure of both palatal impactions. Before this surgery, CBCT images were used to confirm the definitive localization of the impactions and their relationship to the adjacent teeth (*Fig. 18*).

Fig. 11.
U & L bonding: .014" CuNiTi archwires were used for both arches. The deep overbite was opened with GIBT (Glass Ionomer Bite Turbos) bonded on the lingual surfaces of the maxillary central incisors.

Fig. 12:
Upper arch: .014x.025" CuNiTi with open coil spring to open up space for the maxillary canines.

Two weeks after the surgery, the upper canines erupted spontaneously about 3~5 mm and were clearly visible in the palate (*Fig. 21*). Both maxillary canines were bonded with low torque brackets five months after the surgical exposure. At the same appointment, GIBTs were bonded on the lower first molars and the previous GIBTs were removed from the palatal surface of the maxillary central incisors (*Fig. 13*). Three months later, a crown lengthening operation was performed on both maxillary canines to remove the labial soft tissue prior to repositioning the brackets (*Fig. 14*). Open coil springs were used as needed to open space to align all teeth in both arches (*Figs. 15 & 16*). Two months before debonding, the finishing and detailing was accomplished by repositioning the brackets (*Fig. 17*). In the 31st month of treatment, all fixed appliances were removed.

Results Achieved

The patient was treated to the planned result, as documented by cephalometric radiograph superimpositions (*Figs. 4, 5, 6 and 8*). For an over 14 year old female, there was a surprisingly large

Fig. 13:
Five months after surgical exposure, #13 & 23 were bonded with low torque brackets to enhance labial root torque while aligning the palatally displaced canines to the labial and GIBT were bonded on lower first molars.

Fig. 14:
Crown lengthening operation to remove the excess labial soft tissue on the maxillary canines was carried out before repositioning the brackets.

Fig. 15: Multiple open coil springs are used to open space for optimal alignment of the maxillary dentition.

Fig. 16: Positive overjet for the previously impacted maxillary canines was achieved eight months after they were bonded.

Fig. 17: Two months before debonding, finishing and detailing were accomplished with bracket repositioning.

amount of facial growth, as evidenced by ~5mm increase in mandibular length. A summary of the cephalometric measurements is provided in Table 1.

The ABO Cast-Radiograph Evaluation (*CRE*) was 20 as shown in the subsequent worksheet.

Maxilla (*all three planes*):

- A – P: *Increased*
- Vertical: *Increased*
- Transverse: *Maintained*

Mandible (*all three planes*):

- A – P: *Maintained*
- Vertical: *Increased*
- Transverse: *Maintained*

Maxillary Dentition:

- A – P: *Proclined incisors*
- Vertical: *Upper incisors were intruded*
- Transverse: *Expanded*

Mandibular Dentition:

- A – P: *Increased axial inclination of the incisors*
- Vertical: *Compensatory extrusion of the lower arch with normal expression of growth*
- Transverse: *Expanded*

Facial Esthetics:

- Lower facial height increased due to normal expression of facial growth

Retention

Upper clear removable and lower 4-4 fixed retainers were delivered. The patient was instructed to wear the upper clear retainer full time for the first six months and nights only thereafter. In addition, the patient was instructed in proper home hygiene and maintenance of the retainers.

Final Evaluation of the Treatment

In general, both upper and lower arches were ideally aligned in a Class I relationship with good

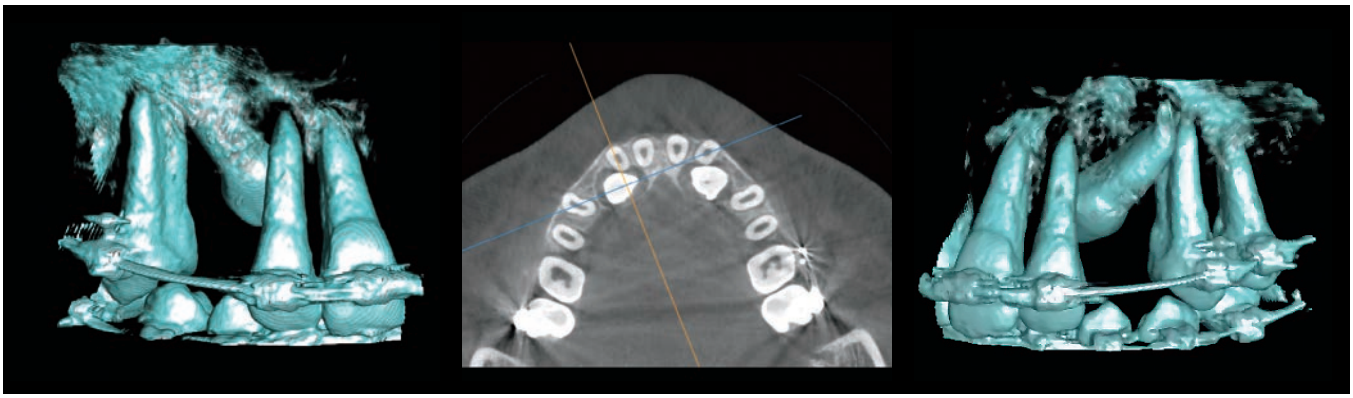


Fig. 18:
CBCT images were taken before surgery to confirm the position of the impactions and their relationships with the adjacent teeth.

interdigitation. The deep overbite was reduced from 100% (8*mm*) to 25% (2*mm*), and the overjet was well maintained with incisors in contact. The CRE score was 20 points, reflecting problems in alignment/rotation of canines, marginal ridge discrepancies of the lower 1st and 2nd molars, lack of occlusal contacts, and axial inclination discrepancies for the mandibular 1st molars.

Discussion

The maxillary canine is the second most common impaction, following the third molars. Most third molars are expendable, but maxillary canines are important dental units for both function and esthetics. When they are impacted, they may compromise adjacent teeth. Therefore, management of upper canine impaction is a routine but critically important task for orthodontists. It has been reported that 85% of maxillary canine impactions are on the palatal surface, but only 15% are positioned labially. Radiographic evaluation in late mixed dentition may reveal the potential for impactions.[3,4] According to a study of unerupted canines, the depth of the cusp tip, its proximity to the midline, and the degree of horizontal orientation were positively correlated with the length of treatment time to recover the impacted teeth.[5,6] Interceptive treatment involves extraction of the primary canines and opening space for the impacted teeth. Furthermore, Ericsson and Kurol[7-9] reported that extraction of the primary canines between the age of 10 and 13 usually simplifies treatment and enhances the outcome.

For the present patient, the cusp tips of the impacted canines overlapped the midline of the lateral incisors bilaterally, indicating that the chance of self-eruption was only ~64%. Although the upper right permanent canine remained impacted, the cusp tip tilted inferiorly and the tooth axis improved, four months after extracting the primary canine. This self-correction of an impacted canine often occurs after obstacles are removed from the path of eruption (*Figs. 19 & 20*). Furthermore, the self-

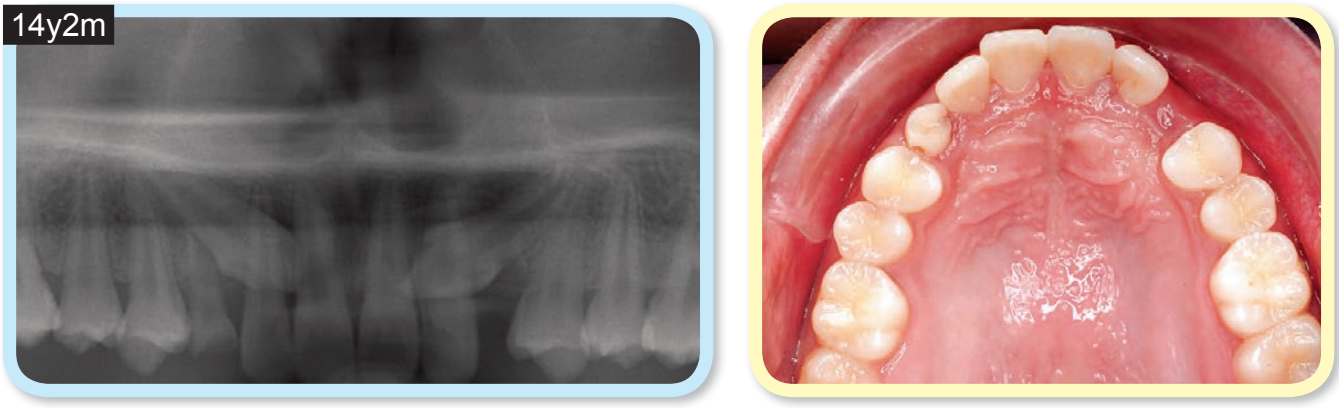


Fig. 19:
Left: The cusp tip of upper right canine was superior to than that of left canine. The crowns of the impacted canines extended to the palatal surface of the central incisors.
Right: An over-retained upper right primary canine interferes with the desired path of eruption for the impacted permanent right canine.

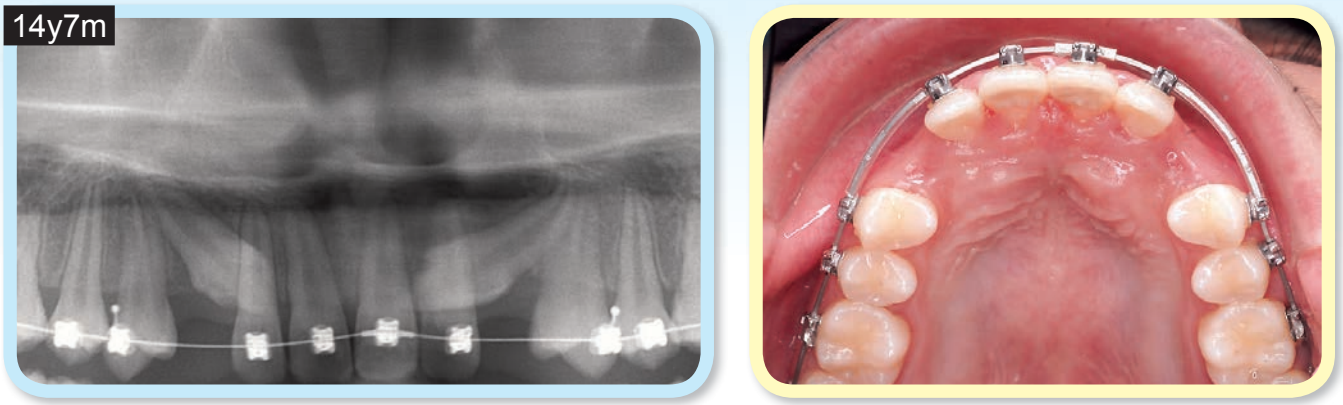


Fig. 20.
Left: Four months after the upper right primary canine extraction, the cusps tips of the right canine had moved inferiorly and its axial inclination had improved.
Right: Adequate space has been opened to align the impactions.

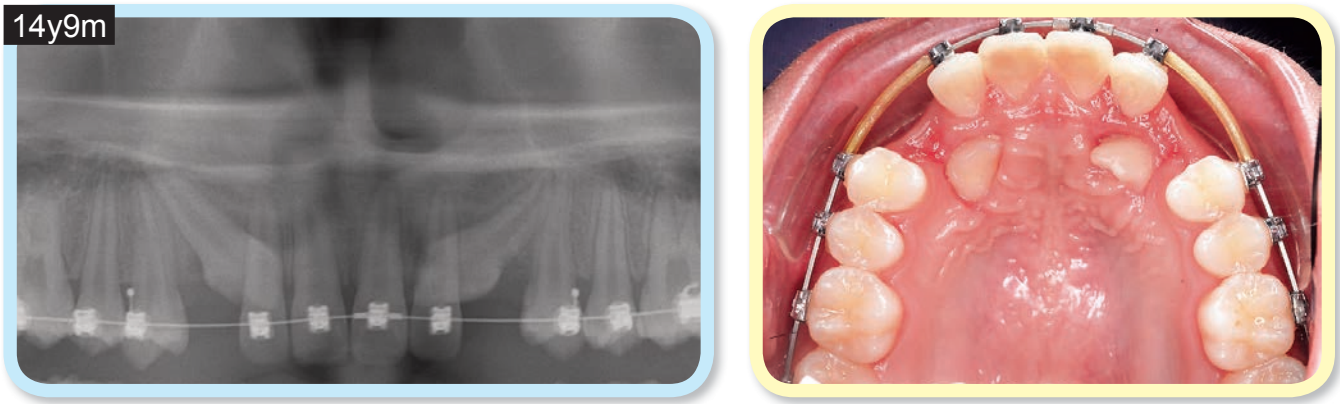


Fig. 21: The upper canines began to erupt spontaneously two weeks after surgical uncovering.

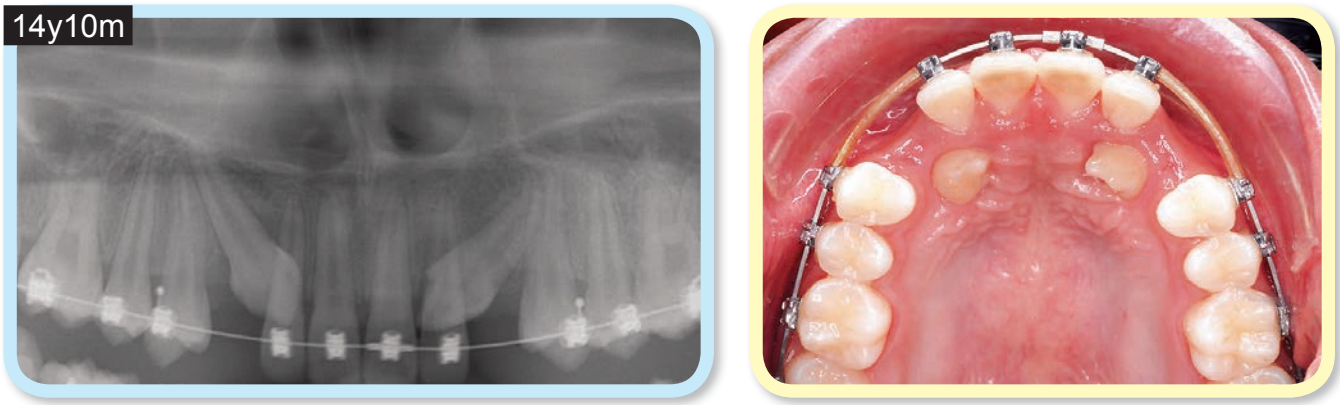


Fig. 22: Six weeks after surgical exposure operation, the previous impacted maxillary canines are continuing to erupt.

correction of both the position and angulation improved the potential for recovering the impacted canines.

Removing the palatal soft and hard tissue in the path of eruption is essential for predictable spontaneous eruption.[10-12] CBCT imaging is more sensitive than conventional radiography for both canine localization and the identification of root resorption on adjacent teeth.[13] The surgery may be performed after opening space for the impacted tooth or teeth. Treatment time is substantially reduced when the bonding of fixed orthodontic appliances is delayed until the canine has erupted into the palate.[14]

GIBTs on the central incisors were used in the present patient to achieve vertical control of the 100% deep bite. Although an equal and opposite force was applied to upper and lower incisors, more intrusion occurred for the upper incisors in this growing patient, resulting in a decreased incisal exposure as the facial height increased (*Figs. 9, 23 & 24*). The follow-up crown lengthening procedure for the maxillary canines may have been avoided if the teeth had erupted further prior to bonding, but that approach may have complicated the correction of the canine crossbites.

When palatally impacted canines are moved labially, the chances of soft tissue accumulation on the facial surface is high. Therefore, the patient should be prepared in advance for the probable crown lengthening surgery. In many instances, the excess soft tissue can be simply removed with a diode laser.[14]

Conclusion

In conclusion, the management of palatally impacted canines is a common challenge in orthodontics. Early detection of impacted maxillary canines, and extraction of the primary canine extraction, often improves the position and axial inclination of the impaction(s). CBCT imaging is

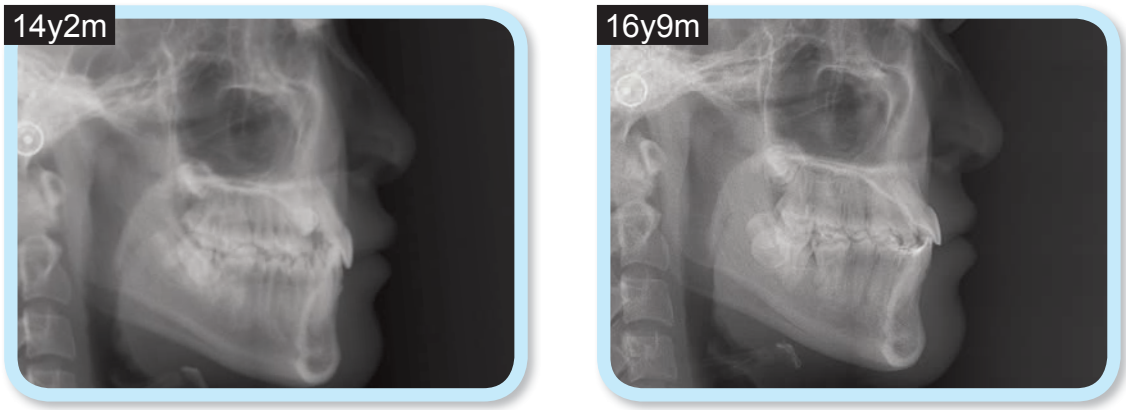


Fig. 23:
Intrusion and increased axial inclination on upper incisors during treatment is documented with pre-treatment and post-treatment cephalometric films.

important for defining the position of the impactions and assessing potential damage to adjacent teeth. Proper uncovering of the impacted maxillary canines by removing all soft and hard tissue in the path of eruption is essential for achieving a favorable spontaneous eruption. The latter usually results in at least some self-correction of the long axis of the impactions, which considerably simplifies alignment with fixed appliances.

Acknowledgements

1. Paul Head for English editing.

2. Thanks to Dr. Nancy Nie-Shiuh Chang and Dr. Yueh-Lung Wu for surgical exposure and crown lengthening of the impacted maxillary canines.

References

1. Peck S, Peck L, Kataja M. The palatally displaced canine as a dental anomaly of genetic origin. Angle Orthod 1994;64:249–56.
2. Jacoby H. The etiology of maxillary canine impactions. Am J Orthod 1983;84:125–32.
3. Bishara SE. Impacted maxillary canines: A review. Am J Orthod Dentofacial Orthop 1992;101:159–71.
4. Schindel RH, Duffy SL. Maxillary transverse discrepancies and potentially impacted maxillary canines in mixed-dentition patients. Angle Orthod 2007;77:430-435.
5. Ericson S, Kurol J. Radiographic assessment of maxillary canine eruption in children with clinical signs of eruption disturbance. Eur J Orthod 1986;8:133-140.
6. Ericson S, Kurol J. Radiographic examination of ectopically erupting maxillary canines. Am J Orthod Dentofacial Orthop 1987;91:483-492.
7. Shapira Y, Kuftinec MM. Early diagnosis and interception of potential maxillary canine impaction. J Am Dent Assoc 1998;129:1450–4.
8. Ericson S, Kurol J. Early treatment of palatally erupting maxillary canines by extraction of the primary canines. Eur J Orthod 1988;10:283–95.
9. Power SM, Short MB. An investigation into the response of palatally displaced canines to the removal of deciduous canines and an assessment of factors contributing to favorable eruption. British Journal of Orthodontics 1993;20:215-223.
10. 10. Kokich VG. Surgical and orthodontic management of impacted maxillary canines. Am J Orthod Dentofacial Orthop 2004;126:278–83.
11. Schmidt AD, Kokich VG. Periodontal response to early uncovering, autonomous eruption and orthodontic alignment of palatally impacted maxillary canines. Am J Orthod Dentofacial Orthop 2007 Apr;131(4):449-455
12. Kokich VG. Preorthodontic uncovering and autonomous eruption of palatally impacted maxillary canines. Semin Orthod 2010;16: 205-211.
13. Alqerban A, Jacobs R, Fieuws S, Willems G. Comparison of two cone beam tomographic systems versus panoramic imaging for localization of impacted maxillary canines and detection of root resorption. Eur J Orthod 2011;33:93– 102.
14. Chang HN, Su CW, Hsu YL, Roberts WE. Soft tissue considerations for the management of impactions. Int J Ortho Implantol 2011;24:50-9.

Discrepancy Index Worksheet

TOTAL D.I. SCORE 15+16=31*

OVERJET

0 mm. (edge-to-edge)	=	
1 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
7.1 – 9 mm.	=	4 pts.
> 9 mm.	=	5 pts.

Negative OJ (x-bite) 1 pt. per mm. per tooth =

Total = 0

OVERBITE

0 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
Impinging (100%)	=	5 pts.

Total = 5

ANTERIOR OPEN BITE

0 mm. (edge-to-edge), 1 pt. per tooth
then 1 pt. per additional full mm. per tooth

Total = 0

LATERAL OPEN BITE

2 pts. per mm. per tooth

Total = 0

CROWDING (only one arch)

1 – 3 mm.	=	1 pt.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	4 pts.
> 7 mm.	=	7 pts.

Total = 2

OCCLUSION

Class I to end on	=	0 pts.
End on Class II or III	=	2 pts. per side _____ pts.
Full Class II or III	=	4 pts. per side _____ pts.
Beyond Class II or III	=	1 pt. per mm. additional _____ pts.

Total = 0

LINGUAL POSTERIOR X-BITE

1 pt. per tooth Total = 0

BUCCAL POSTERIOR X-BITE

2 pts. per tooth Total = 0

CEPHALOMETRICS (See Instructions)

ANB ≥ 6° or ≤ -2° = 4 pts.

Each degree < -2° _____ x 1 pt. = _____

Each degree > 6° _____ x 1 pt. = _____

SN-MP

≥ 38° = 2 pts.

Each degree > 38° _____ x 2 pts. = _____

≤ 26° = 1 pt.

Each degree < 26° _____ x 1 pt. = _____

1 to MP ≥ 99° = 1 pt.

Each degree > 99° _____ x 1 pt. = _____

Total = 0

OTHER (See Instructions)

Supernumerary teeth	_____	x 1 pt. =	_____
Ankylosis of perm. teeth	_____	x 2 pts. =	_____
Anomalous morphology	_____	x 2 pts. =	_____
Impaction (except 3rd molars)	2	x 2 pts. =	4
Midline discrepancy (≥3mm)		@ 2 pts. =	_____
Missing teeth (except 3rd molars)	_____	x 1 pts. =	_____
Missing teeth, congenital	_____	x 2 pts. =	_____
Spacing (4 or more, per arch)	_____	x 2 pts. =	_____
Spacing (Mx cent. diastema ≥ 2mm)		@ 2 pts. =	_____
Tooth transposition	_____	x 2 pts. =	_____
Skeletal asymmetry (nonsurgical tx)		@ 3 pts. =	_____
Addl. treatment complexities	2	x 2 pts. =	4

Identify: Surgical exposure was performed to uncover the impacted maxillary canines.

Total = 8

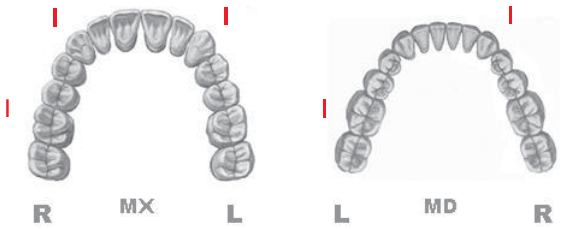
* The additional 16 points is from the subsequent Impaction Discrepancy Index

Cast-Radiograph Evaluation

Total CRE Score 20

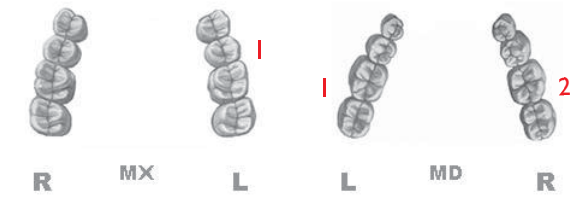
Alignment/Rotations

5



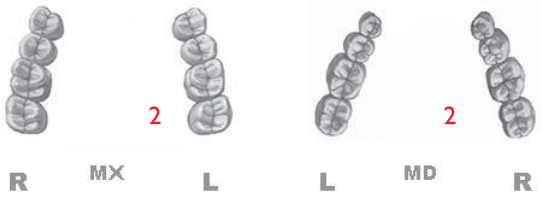
Marginal Ridges

4



Buccolingual Inclination

4

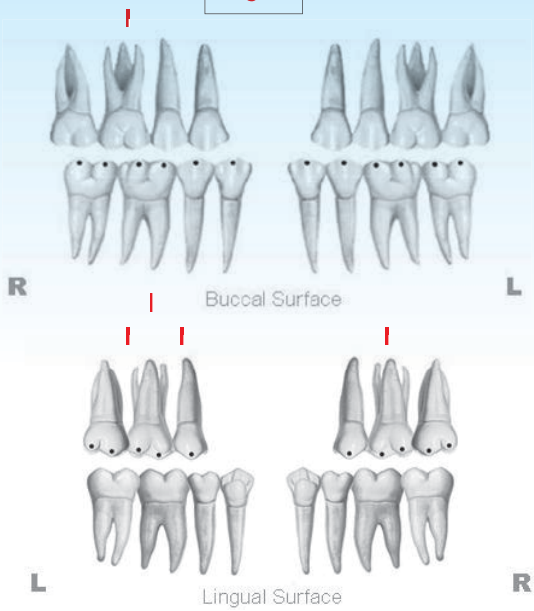


Overjet

0

Occlusal Contacts

5

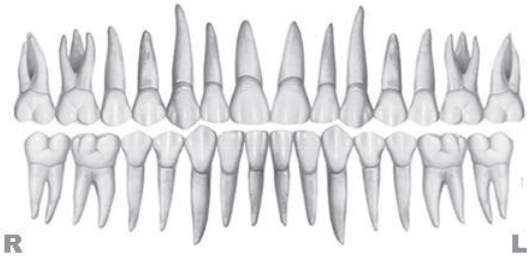


Occlusal Relationships

0

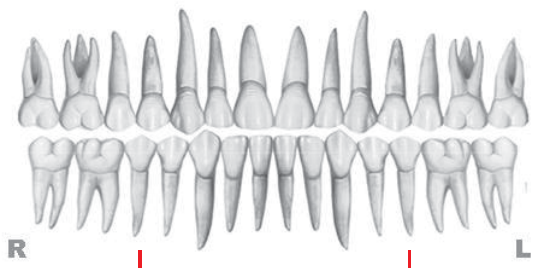
Interproximal Contacts

0



Root Angulation

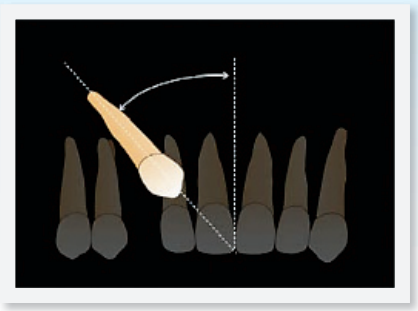
2



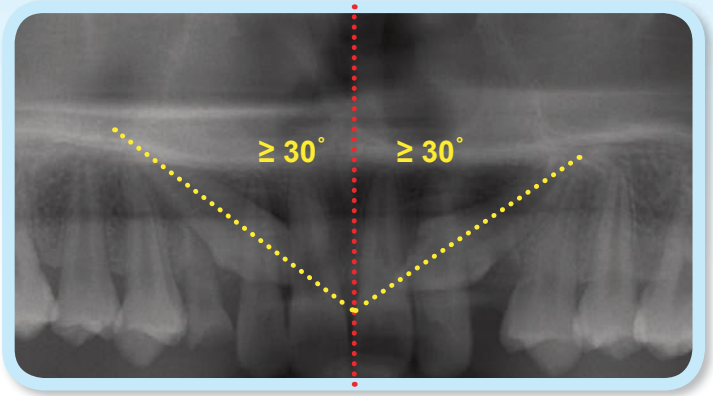
INSTRUCTIONS: Place score beside each deficient tooth and enter total score for each parameter in the white box. Mark extracted teeth with "X". Second molars should be in occlusion.

Impaction Discrepancy Index : 16

1. Angulation of the canine to the middle in degree

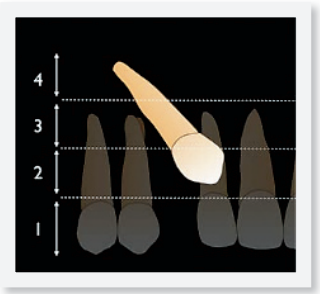


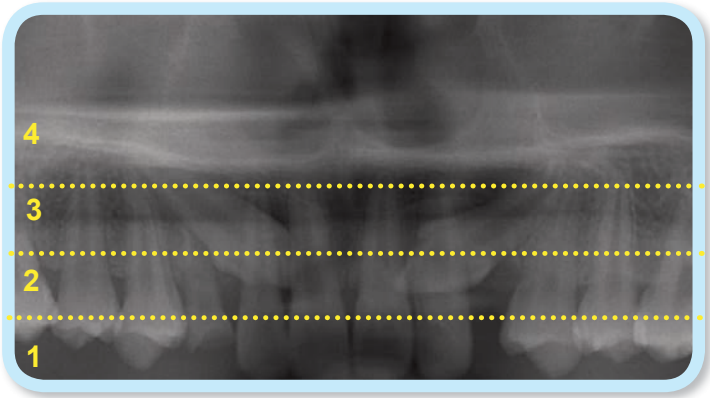
Grade 1: 0˚~15˚ = 1pt.
Grade 2: 16˚~30˚ = 2pts.
Grade 3: ≥ 31˚ = 3pts.



Total = 3x2 = 6

2. Vertical distance from the occlusal plane

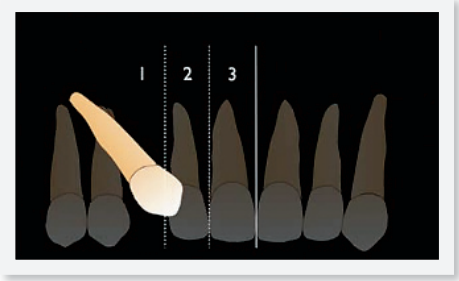




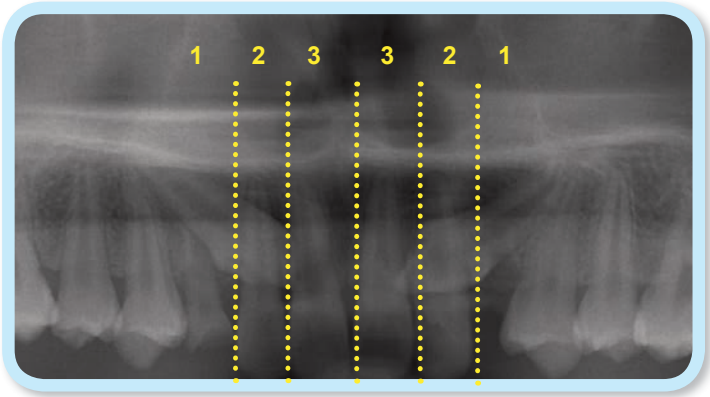
Grade 1: Below the level of the CEJ = 1pt.
Grade 2: Above the CEJ, but less than halfway up the root = 2pts.
Grade 3: More than halfway up the root, but less than the full root length = 3pts.
Grade 4: Above the full length of the root = 4pts.

Total = 2x2 = 4

2. Mesiodistal position of the canine tip



Grade 1: No horizontal overlap
Grade 2: Overlap with lateral incisor
Grade 3: Overlap with central incisor



Total = 3x2 = 6

I nternational
Association for
Orthodontists &
I mplantologists

For more information on benefits and requirements of iAOI members, please visit our official website: http://iaoi.pro.

Join the *iAOI*, the future of dentistry!

How to join iAOI?

Certified members of the Association are expected to complete the following three stages of requirements.

1. Member

Doctors can go to http://iaoi.pro to apply for membership to join iAOI. Registered members will have the right to purchase a workbook in preparation for the entry exam.

2. Board eligible

All registered members can take the entry exam. Members will have an exclusive right to purchase a copy of iAOI workbook containing preparation materials for the certification exam. The examinees are expected to answer 100 randomly selected questions out of the 400 ones from the iAOI workbook. Those who score 70 points or above can become board eligible.

3. Diplomate

Board eligible members are required to present three written case reports, one of which has to be deliberated verbally. Members successfully passing both written and verbal examination will then be certified as Diplomate of iAOI.

4. Ambassador

Diplomates will have the opportunity to be invited to present six ortho-implant combined cases in the iAOI annual meeting. Afterwards, they become Ambassador of iAOI and will be awarded with a special golden plaque as the highest level of recognition in appreciation for their special contribution.

*International Journal of Orthodontics & Implantology (IJOI) is the official publication of International Association for Orthodontists & Implantologists (iAOI).

iAOI

I nternational
A ssociation for
O rthodontists &
I mplantologists

國際矯正植牙學會

歡迎至 http://iaoi.pro 獲得更多 iAOI 會員權益與專科認證等最新消息。

加入 *iAOI*，共創牙科的未來！

如何加入 iAOI？

欲取得國際矯正植牙學會會員資格，需完成下列階段：

1. Member

醫師可以在網站 http://iaoi.pro/ 直接申請加入會員資格，申請完成的醫師將具有資格索取線上考題題庫或是考題題庫紙本，得用以準備入會考試。

2. Board eligible

所有申請加入會員資格的醫師始可參加入會考試，參加考試的醫師將從四百題題庫選出的一百道題目作答，以 70 分（含）為通過標準，通過的醫師即可獲得 Board eligible 資格。考試的時間為一個小時。下次考試的時間為2014/11/30（日）於台灣台北金融研訓院。

3. Diplomate

已獲得會員資格者，需要提出三篇案例報告，其中一篇案例需要再做口頭報告，通過審查後，始可獲得 iAOI 的 Diplomate 資格。三篇案例中，至少須有一篇案例，同時涵蓋 矯正與植牙領域。此為單一案例的個案報告。報告人和評論人需在規定的時間內完成報告及講評。每個報告人需在 12 分鐘內報告單一個案。大會會在第十分鐘時響第一次鈴，第十二分鐘到時會直接將麥克風關閉。每個個案報告結束後，全體評論人共有八分鐘可以講評。 大會會在第六分鐘時響第一次鈴，第十分鐘到時會直接將麥克風關閉。評論人如果有額外的意見可以以書面方式提供給報告人。

4. Ambassador

獲得院士資格的醫師，將有機會受邀在 iAOI 年度大會中提出六篇矯正與植牙結合的案例報告。完成報告的醫師，始取得 iAOI Ambassador 的資格，並且獲頒紀念獎牌，以表揚醫師對學會的特別貢獻。

＊國際矯正植牙期刊 (IJOI) 是國際矯正植牙學會 (iAOI) 發行的官方刊物。

iAOI

Orthodontic Solutions to Asymmetry & TMJ Problems

2015. 12. 27

Dr. Elizabeth Menzel

Dr. Menzel 來自德國，成長於南非，於法蘭克福大學完成她的矯正訓練。她的專長在以系統性診斷，搭配使用自鎖式矯正器的矯正方式來處理嚴重的顳顎問題。她在德國南方有自己的臨床診所，也在英國和立陶宛治療有嚴重顳顎疾病的矯正患者。

強力推薦

張慧男醫師

我第一次聽 Dr. Menzel 的演講是在三年前美國 Damon Forum 的 break out session，當時就對她深入的案例分析以及獨到的治療方式印象深刻。隔天我又再次去重聽她的演講，赫然發現昨天的鄰席聽眾-加拿大名醫 Dr. Jean Réne 也忍不住跑來重聽，他告訴我：「這次來聽這個演講就夠本了！」她與眾不同的魅力可見一般。

今年在歐洲的 Damon Forum 再度聆聽她的演講，她熱情的表達魅力再次征服全場觀眾。Dr. Menzel 的專長在以簡潔的矯正技術來處理各式的 asymmetry 問題。由於她的分析能深入討論 TMJ 與 occlusion 的關係，讓我們對病因及其發展可以有更深入的體會，也因此可以發展出有創見的治療方式。這是我二十多年來聆聽這麼多矯正演講，深感極具啟發性的一名講者。她不僅是一位實踐家，也是一位哲學家。誠懇向大家推薦這一場今年絕對不能錯過的原創演講！

時間：*2015/12/27 9:00-17:00*

地點：台灣金融研訓院 菁業堂

台北市羅斯福路 3段62號2-3F

報名方式：

官方網站：http://iaoi.pro

或報名專線：*03-5711377*

收費表：

	11/30 前報名	12/01 後報名
會員價	*3,600* 元	*5,000* 元
非會員價	*5,000* 元	*7,000* 元

「會員」為已註冊並繳交入會費、2015年費之醫師，
其餘皆適用「非會員」價（未註冊者請至http://iaoi.pro註冊）。
協辦單位會員同享會員價。退費需扣除一成行政手續費用。

入會費	年費	第一階段資格考 Board Eligibility Exam
*1,000*元	*3,000*元	*9,000*元 ~~*13,000*元~~ （含入會費、年費、考試及證書費）

匯款帳戶：
日盛國際商業銀行（815）光復分行（0347）
帳號：105-27376210-000
戶名：國際矯正植牙學會

主辦單位：國際矯正植牙學會

協辦單位：中華民國齒顎矯正學會　台灣口腔矯正醫學會　湧傑企業股份有限公司

Animation & Illustration Workshop

New!

Advanced Keynote Workshop

2015
12/05-07
Fri-Sun

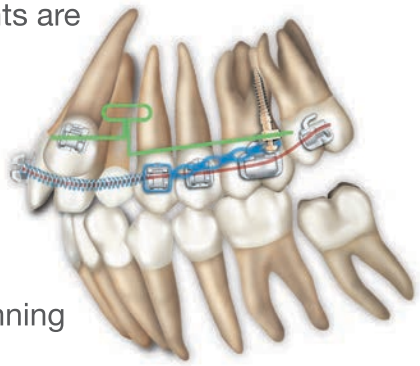
2016
10/22–24
Sat-Mon

9am-5pm
Limited to 25 particiants

Early Bird by
2016/8/5

The fees include three full-day workshops, three nights of shared accommodation, local transportation and meals during the workshop period. Airport pick-up is not included.

Effective dental presentation in today's digital world requires not only clear clinical photos but also diagrams and animation to engage the audience. Moreover, these visual tools are excellent aids to make your presentation unique and memorable. In this workshop Dr. Rungsi will share his dental illustration experiences and demonstrate step by step how to create an illustration from an initial sketch to a finished piece. Active participation and completion of workshop assignments are required for workshop participants.



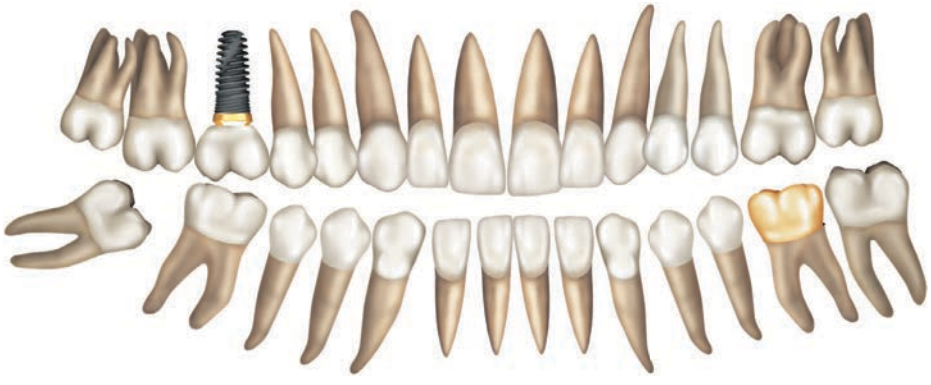
TOPICS:

Learning objectives

- Design illustration in Keynote.
- Showcase your own drawing with stunning animation in Keynote.
- Animation composition.

Requirements:

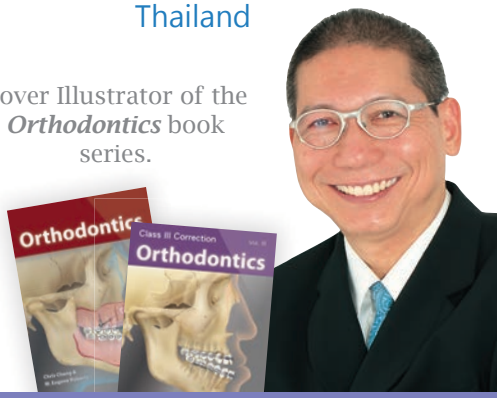
- Mac computer with OSX 10. 10.X
- Keynote 6.X (the latest)



Lecturer

Dr. Rungsi Thavarungkul
Thailand

Cover Illustrator of the ***Orthodontics*** book series.



Newton's A TEL: +886-3-573-5676 course@newtonsa.com.tw

Class III Malocclusion with Camouflage Treatment and Implant Site Development

Summary

A 28-year-old woman presented for orthodontic evaluation with a concave profile, anterior cross-bite, multiple missing teeth, and a skeletal Class III malocclusion. The ABO Discrepancy Index (DI) was 50. Because of asymmetric tooth loss in the lower arch, space was closed for a fixed prosthesis on the right side, but the left side was prepared for an implant, by moving the second premolar distally to develop a more favorable implant site. A passive self-ligating appliance, with bite turbos and bone screw anchorage, achieved optimal occlusal function and pleasing esthetics. This severe mutilated malocclusion was treated to an acceptable dental outcome in 49 months: cast-radiograph evaluation (CRE) of 32 with a pink and white dental esthetics score (P&W) of 3. (Int J Orthod Implantol;39:24-49)

Key words:
Implant site development, anterior cross-bite, Class III malocclusion, non-extraction, miniscrews, extra-alveolar anchorage.

History and Etiology

A 28-year-old female sought orthodontic treatment for a concave profile and irregular dentition (*Figs. 1 and 2*). Clinical evaluation revealed a Class III molar relationship, anterior crossbite, and a crowded maxillary anterior segment. Cephalometric radiographs before and after treatment document the conservative correction of the severe Class III skeletal relationship (*Figs. 2 and 3*). Before treatment photographs of the maxillary anterior segment show severe crowding and an anterior crossbite (*Fig. 4*). There was no contributing medical history nor known habits, but the asymmetric loss of mandibular molars was a challenging complication. The etiology of the Class III malocclusion was probably ectopic eruption of the maxillary central incisors, and the tooth loss was due to caries. Superimposition of cephalometric tracings (*Fig. 5*) document the successful dentofacial management of the severe skeletal malocclusion.

Diagnosis

Skeletal:

- Class III (*SNA 83°, SNB 87°, ANB -4°*)
- Insufficient bone height and width of the implant site in the area of tooth #19

Dental:

- Angle Classification: *Class III on both sides*
- Tooth Size to Arch Length Discrepancy: *10 mm in the maxillary arch*
- Blocked out: *teeth #6 and 11*
- Crossbite: *teeth #3-5 and #7-10*
- Missing Teeth: *#19 and 30*
- Compromised Prosthesis: *Teeth #29-31*
- American Board of Orthodontics (*ABO*) Discrepancy Index (*DI*): *50 (see subsequent work sheet)*

Dr. Ariel Chang,
Instructor, Beethoven Orthodontic Course (Left)

Dr. Chris Chang,
Founder, Beethoven Orthodontic Center
Publisher, International Journal of Orthodontics& Implantology (middle)

W. Eugene Roberts,
Consultant, International Journal of Orthodontics & Implantology (right)

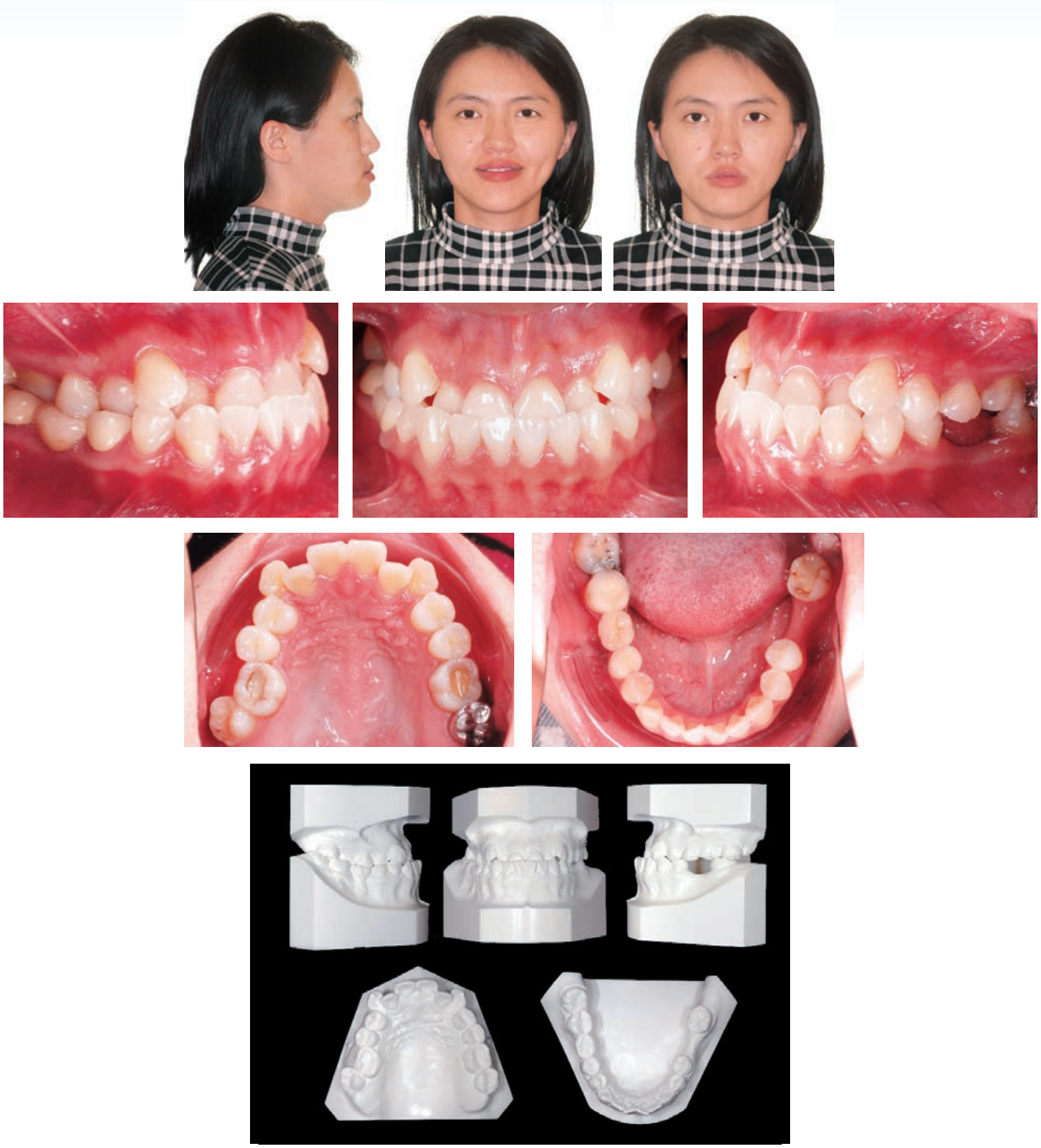


Fig. 1: Pre-treatment facial, intraoral photographs and dental models (casts)

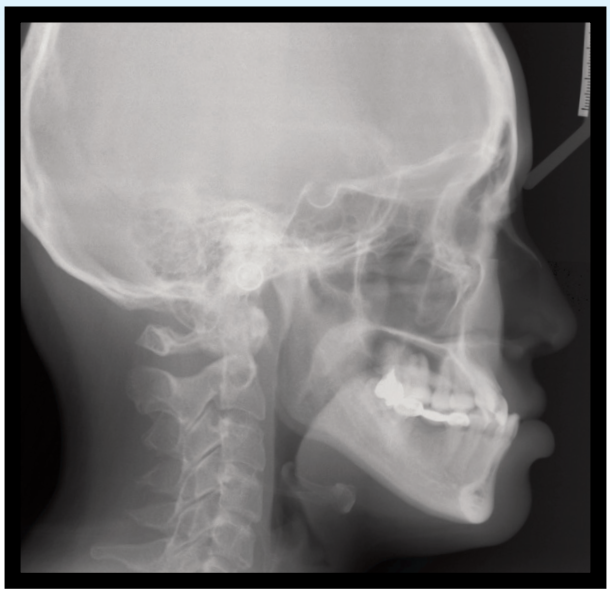


Fig. 2: Pre-treatment cephalometric radiograph

Fig. 3: Post-treatment cephalometric radiograph

Facial:

- Concave profile with protrusive lower lip

Specific Objectives of Treatment

Maxilla (*all three planes*):

- A - P: *Maintain*
- Vertical: *Maintain*
- Transverse: *Increase*

Mandible (*all three planes*):

- A - P: *Maintain*
- Vertical: *Maintain*
- Transverse: *Maintain*

Maxillary Dentition

- A - P: *Retract molars and incisors*
- Vertical: *Maintain*
- Inter-canine Width: *Increase*

Fig. 4:
Pre-treatment photographs show maxillary crowding, anterior crossbite, and blocked-out canines.

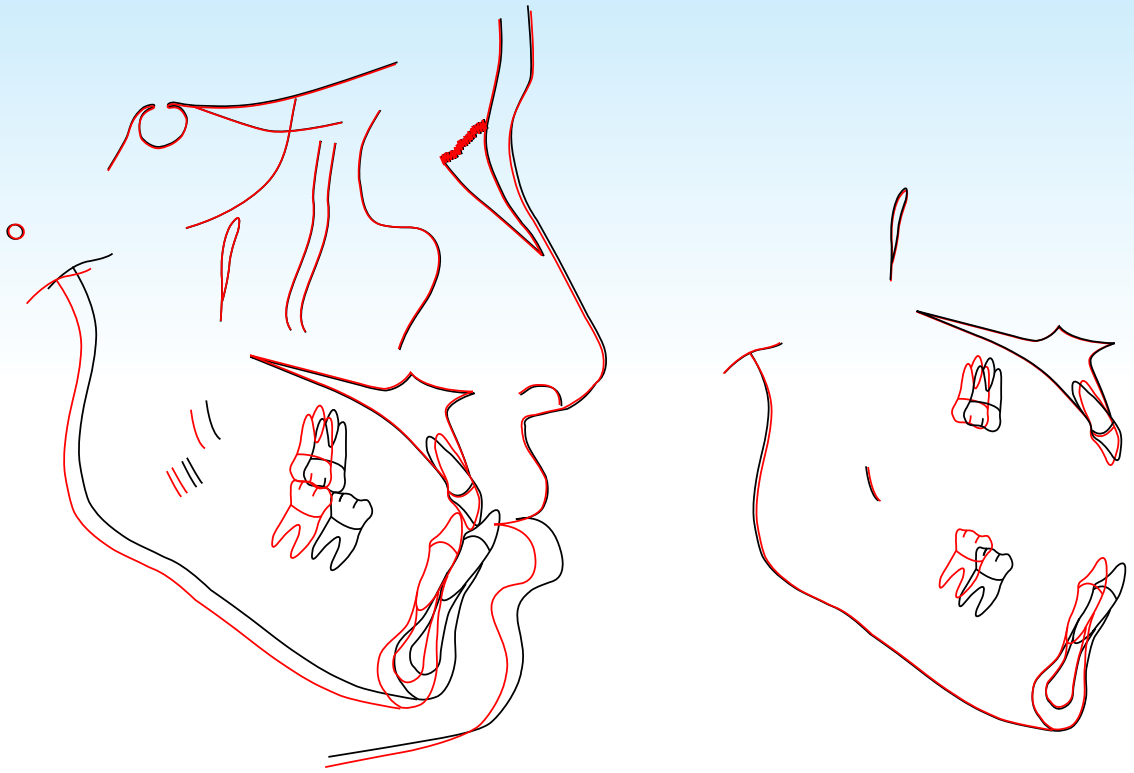


Fig. 5:
Superimposed cephalometric tracings show dentofacial changes over 49 months of treatment (red) compared to the pretreatment positions (black).

- Inter-molar Width: *Increase*
- Buccolingual Inclination: *Increase*

Mandibular Dentition

- A - P: *Retract incisors and molars*
- Vertical: *Maintain*
- Inter-canine Width / Inter-molar Width: *Maintain*
- Buccolingual Inclination: *Maintain*

Facial Esthetics:

- Correct concave profile and protrusive lower lip

Treatment Alternatives

Since the patient had a concave profile and asymmetric missing lower molars (#*17, 19 and 30*), several treatment plans were proposed. In the first scheme proposed removing the existing lower right

CEPHALOMETRIC			
SKELETAL ANALYSIS			
	PRE-Tx	*POST-Tx*	*DIFF.*
SNA°	83°	83°	0°
SNB°	87°	85°	-2°
ANB°	-4°	-2°	-2°
SN-MP°	29°	29°	0°
FMA°	22°	22°	0°
DENTAL ANALYSIS			
U1 TO NAmm	7.0mm	6.5mm	-0.5mm
U1 TO SN°	115°	112°	-3°
L1 TO NBmm	7.0mm	1.0mm	-6.0mm
L1 TO MP°	89°	80°	-9°
FACIAL ANALYSIS			
E-LINE UL	-2.0mm	-2.5mm	0.5mm
E-LINE LL	3.5mm	-1.0mm	-4.5mm

Table 1: Cephalometric summary

fixed prosthesis, extracting both the endodontically treated lower left second molar (*#18*) and the upper left second molar (*#15*), and placing an implant to replace the missing molar #19. The patient was concerned about losing two additional teeth, so she rejected it. The second treatment plan retained both molars, but as before proposed an implant-supported prosthesis to replace #19. However, the use of implants was handicapped by a narrow implant site that required bone augmentation. The patient found bone grafting to be undesirable, so another treatment modality was proposed. In the third treatment plan, the second premolar would be retracted for implant site development, thereby creating a space between the lower left premolars. This approach would produce a three premolar morphology on the lower left side, resulting in a compromised Class II molar occlusion. Also, miniscrews in the infrazygomatic (*IZC*) crests may be needed to retract the upper dentition. Accepting these limitations, the patient agreed to the third treatment plan.

Appliances and Treatment Progress

An .022" slot D3MX® fixed appliance (*Ormco Corporation, Glendora, CA*) was selected, and the following third-order adjustments were specified: standard torque brackets were bonded inversely (*upside down*) on upper incisors, and low torque brackets bonded inversely on lower incisors. The initial archwire was .014" CuNiTi.[1-4] Bite turbos composed of glass ionomer cement were bonded on the lower central incisors. After three months of alignment and leveling, the crossbite problem was resolved, and the bite turbos were removed. Then Class III early light short elastics (*2oz, 3/16"*) were applied, and in the 7th month, the arch wires were changed to .014x.025" CuNiTi. The posterior crossbite between the upper right first molar and the lower second molar was corrected by bonding a button on the palatal surface of the upper first molar, and applying a cross elastic (*3oz, 1/8"*) to the labial surface of the lower second molar. In the 12th month, the wires were changed to .017x.025" titanium molybdenum alloy (*TMA*). Space redistribution for implant site development was initiated by compressing a coil spring between the lower left premolars. Bracket repositioning to correct second order axial inclinations was performed according to a progress panoramic radiograph. Class III elastics (*3.5oz, 3/16"*) were used to correct the sagittal relationships. In the 18th month, the wire was changed to .019x.025" stainless steel (*SS*) in the upper arch and .016x.025" SS in the lower arch. At this point, the space between the lower left posterior teeth was closed, but the upper anterior teeth were flared severely. Two OrthoBoneScrews® (*Newton's A, Hsinchu City, Taiwan*) were placed bilaterally in the IZC to distalize the whole maxillary dentition.[5,6] Reshaping the contour of the maxillary and mandibular incisors was performed to eliminate the interdental dark triangles. Power chain links and power tubes were used to close the space. In the 32nd month, the space between the lower right posterior teeth was closed (*Figs. 6-9*). Consistent with principles of implant site development[7-11] and the achievement of optimal periodontal support,[12-14] the width of the edentulous ridge was increased from 4-8mm (*Fig. 10*) by retraction of the second premolar (*#20*) (*Fig. 11*).

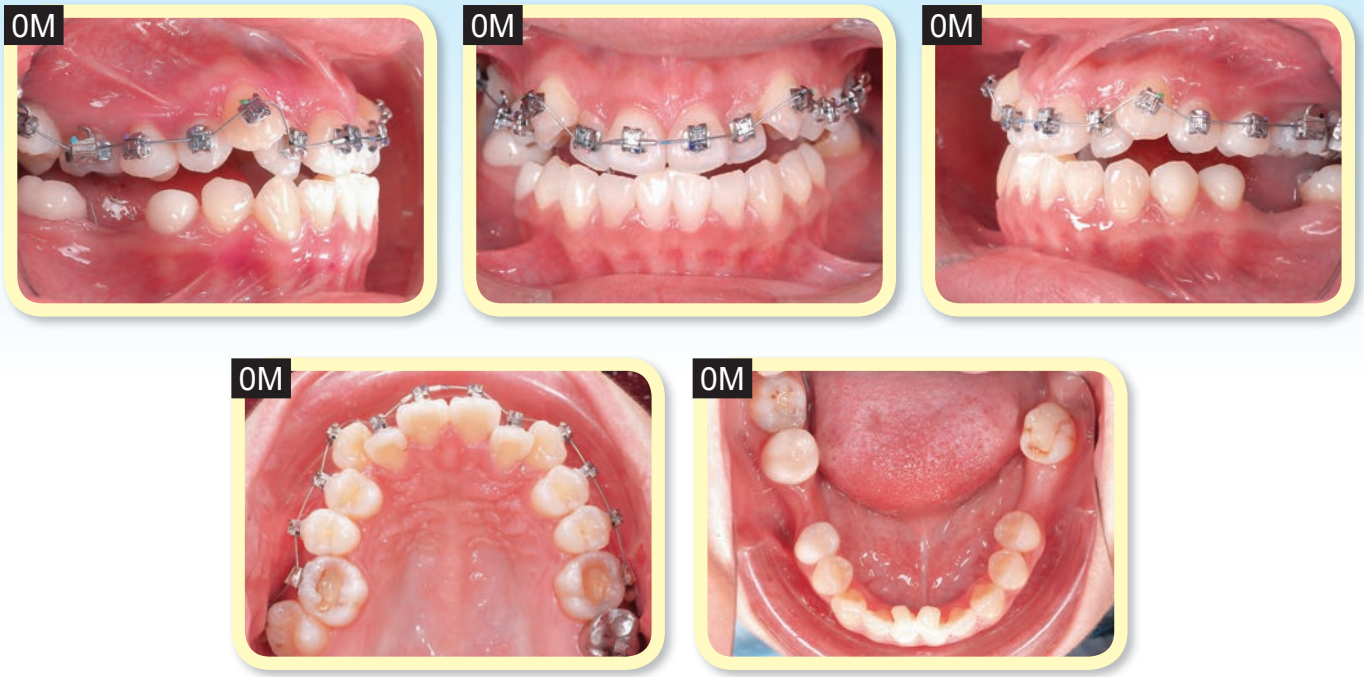


Fig. 6:
At the beginning of the treatment, brackets were bonded on the upper arch, and an .014" CuNiTi arch wire was applied. Two bite turbos were bonded on the lingual surface of the mandibular central incisors to open the bite for correction of the anterior cross bite.

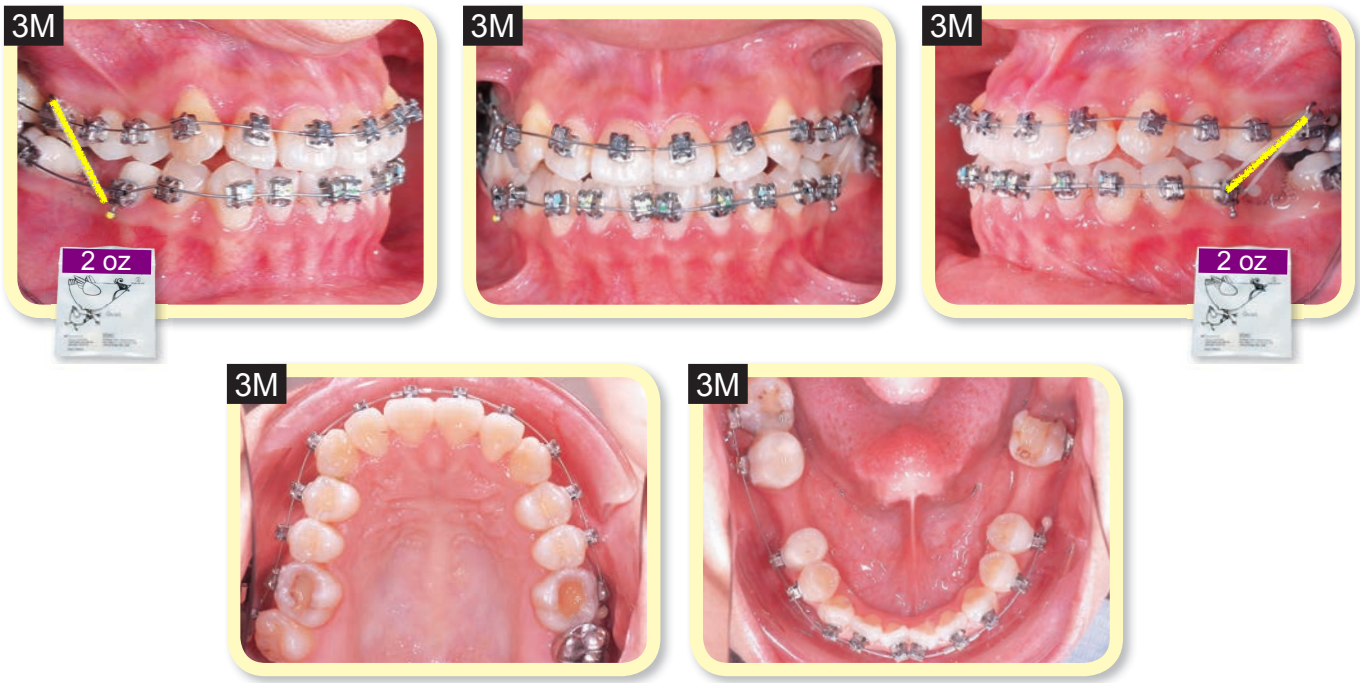


Fig. 7:
In the third month of the treatment, brackets were bonded on the lower arch, and .014" CuNiTi arch wires were applied to both arches. Class III elastics (Quail, 2oz, 3/16") were used from the maxillary first molar to the mandibular second premolar. The anterior bite turbos were removed since the cross bite had been resolved.

Fig. 8:
In the eighteenth month of the treatment, the arch wires were .016x.025" SS in the upper and .017x.025" TMA in the lower. Abundant use of class III elastics resulted in flaring of the upper incisors. The application of class III elastics were stopped and two OrthoBoneScrews were inserted on the infrazygomatic crests (IZC) bilaterally to retract the entire maxillary dentition.

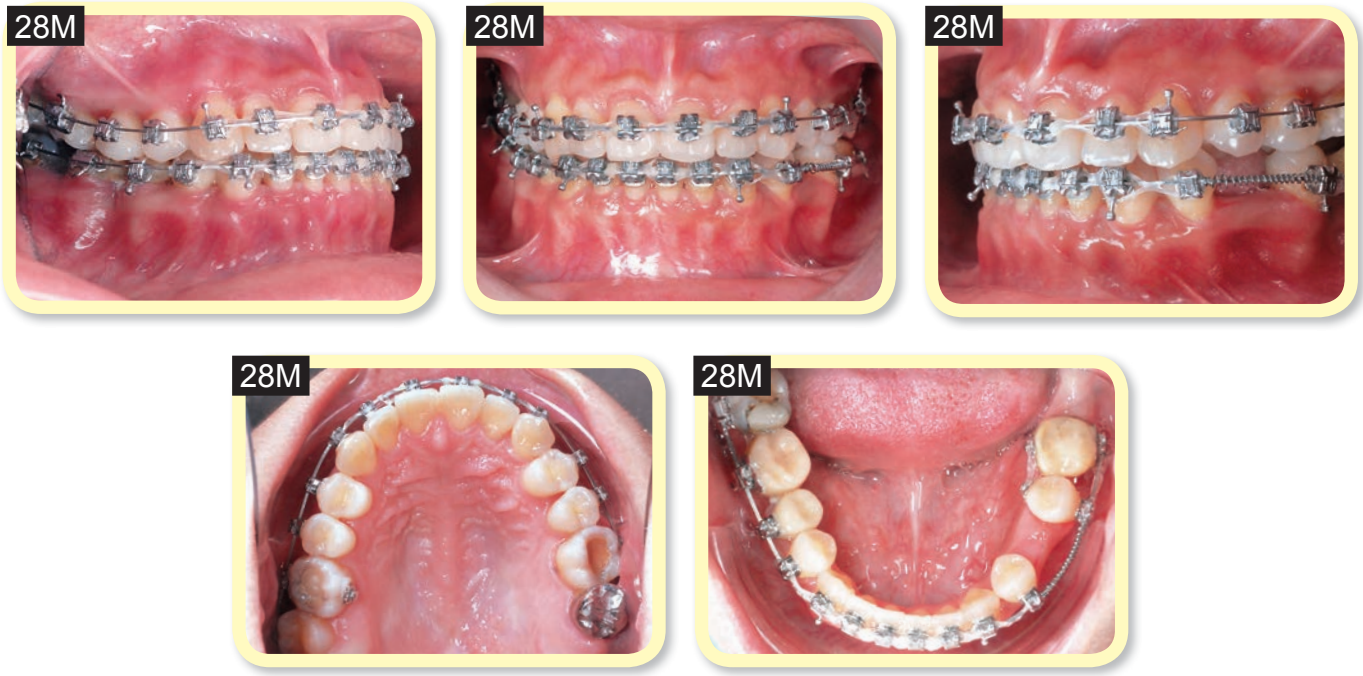
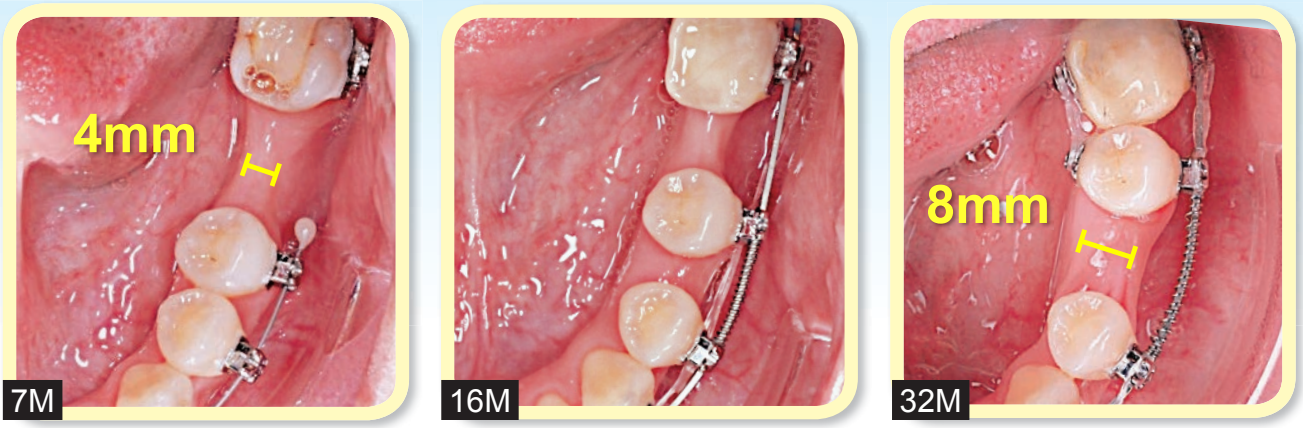
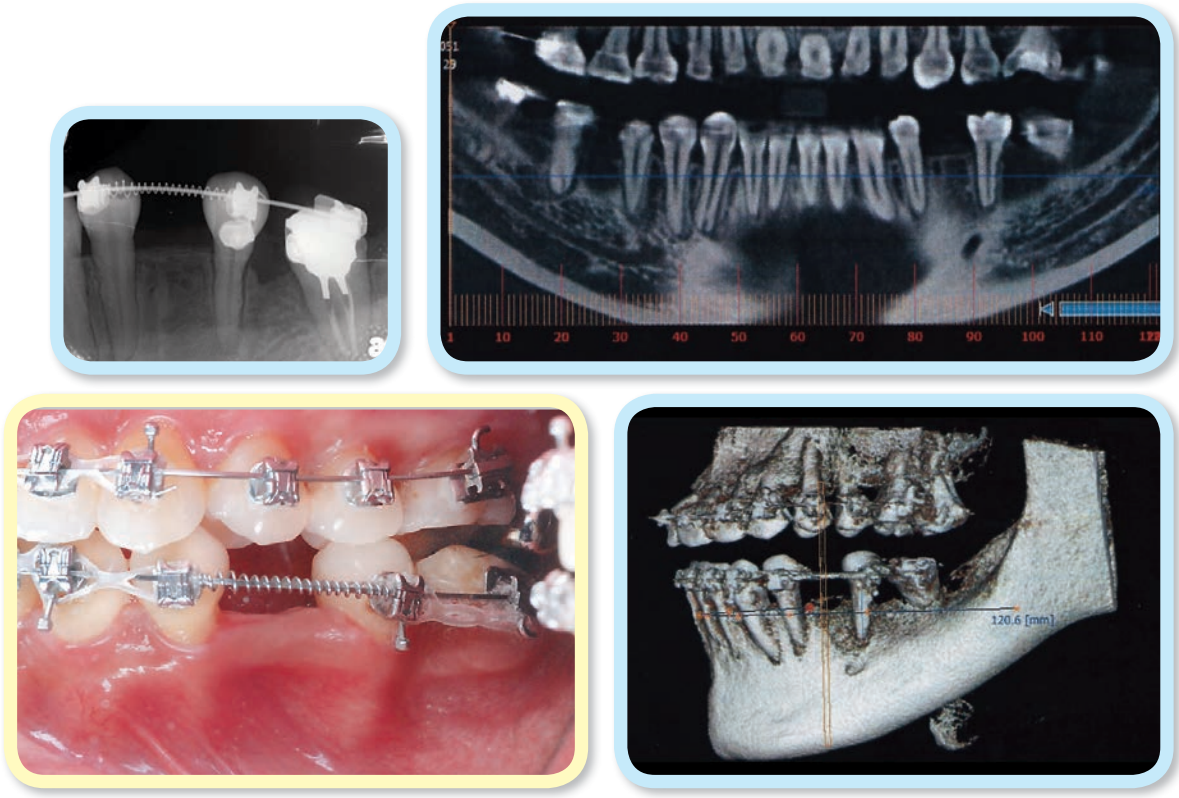


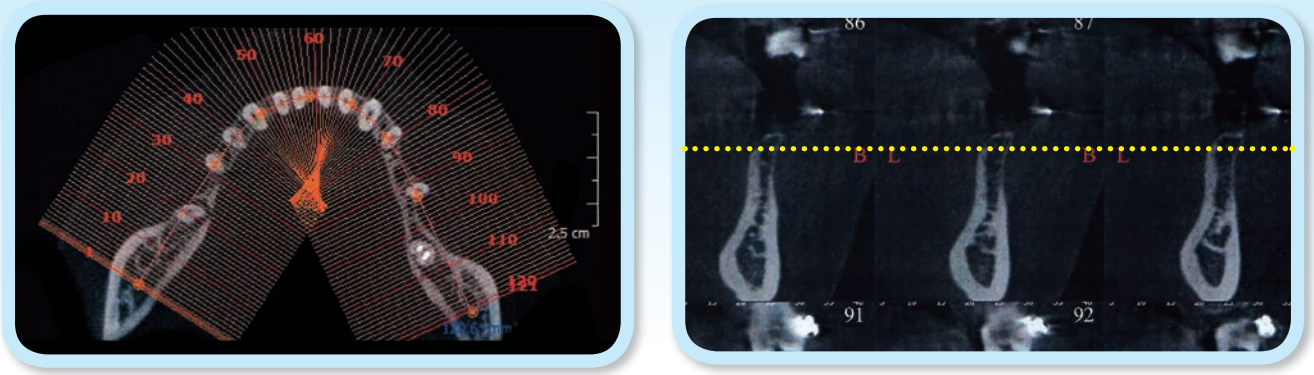
Fig. 9:
In the twenty-eight month (28M) of the treatment, the lower arch wire was .016x.025" SS. The space between the mandibular left premolars was enough for an implant.



Figs. 10:
Before the implant site development, the width of the alveolus at seven months (7M) was about 4mm and the arch wire was .014x.025"CuNiTi (left). At sixteen months (16M) space was being opened between the premolars with a compressed coil spring on a .017x.025" TMA arch wire (middle). At thirty-two months (32M) the width of the implant site was about 8mm. Thus ~24 months of the implant site development enlarged the width of the atrophic ridge from 4 to 8mm.



Figs. 11:
After the space was created (upper left and right), a concavity was noted on the buccal aspect of the implant site (lower left). A follow-up cone beam computed tomography (CBCT) image shows relatively low bone density in the implant site (lower right).



Figs. 12:
The CBCT scan (left) revealed that trimming 2mm of the irregular top of the ridge resulted in 5mm of bone width (right) to place the implant.

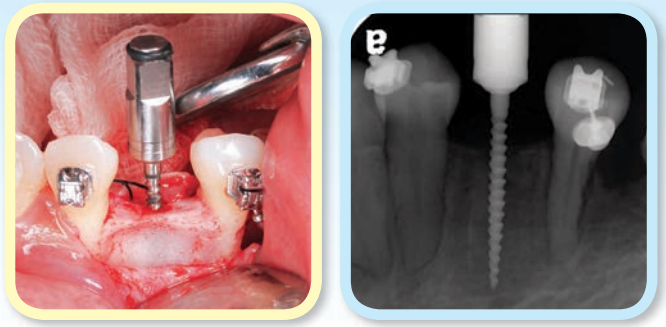
Implant Placement

A pre-operative Cone-Beam Computed Tomography (*CBCT*) scan was taken to evaluate the alveolar bone volume in the implant site (*between #28 and 29*). Also, the mental foramen was located and the depth of implantation site was decided. From the slice views, it was apparent that reducing the ridge height 2mm would result in 5mm of implant site width (*Fig. 12*). The goal was to place an implant, that was 3.5mm in diameter and 11mm in length. The surgical stent was designed for precise implant placement in three dimensions. The implant fixture was positioned 3mm below the future crown margin, with a distance of at least 1.5mm from the adjacent teeth. The 2B-3D rule for dental implant planning, placement and restoration was followed.[15] A crestal incision was performed at the lingual line angle with a No.15c scalpel. Sulcular incisions were made on the buccal and lingual sides of the adjacent teeth, followed by reflection of full-thickness mucoperiosteal flaps.

Figs. 13:
The alveolar ridge was incised with a #15 scalpel to prepare for flap reflection.

Fig. 14:
The surgical stent was fitted to guide the first lancer drill for the initial osteotomy.

After 2mm of the ridge was trimmed, the surgical stent was fitted to guide the first lancer drill for the initial osteotomy. A periapical film was taken with a surgical guide pin placed to check the long axis of the osteotomy and its distance from the adjacent teeth (*Figs. 13-15*). Following the manufacturer's



Figs. 15:
To assess the position of the initial osteotomy, a surgical guide pin was placed (left) and a periapical radiograph was taken to check the mesiodistal angulation and the distance to the adjacent teeth (right).

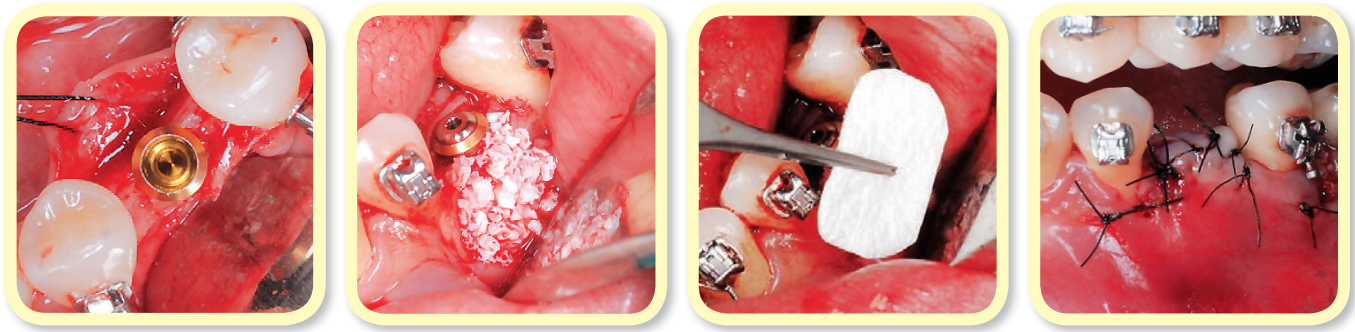
instructions the ridge was expanded step by step until the size of the expansion drill was the closest but still less than the desired implant diameter. Then, an implant fixture (*Ø3.5X8.5mm, TwStar® MegaGen® Taiwan*) was installed with a torque of 30 N-cm. After implant placement, there was a greenstick fracture noticed in the buccal plate, that was covered with a bone graft (*Bio-Oss® Geistlich Biomaterials*) and a membrane (*Lyoplant® B. Braun*), and then sutured. The flap was repositioned and closed with interrupted 5-0 nylon sutures (*Fig. 16*). Post-operative periapical radiographs were taken to check the position and angulation of the implants.

Orthodontic Finishing Stage

In the 37th month, reshaping the contour of the maxillary right incisors was performed to eliminate the interdental dark triangles. The upper right central incisor bracket was also repositioned as indicated by the panoramic film. Before de-bonding, a small interproximal space (*1-2mm*) reopened, so a fixed prosthesis was constructed to retain the corrected position. After 39 months of active treatment, all fixed appliances were removed. Upper and lower clear overlay retainers were delivered for both arches, and the patient was scheduled for the implant placement surgery.

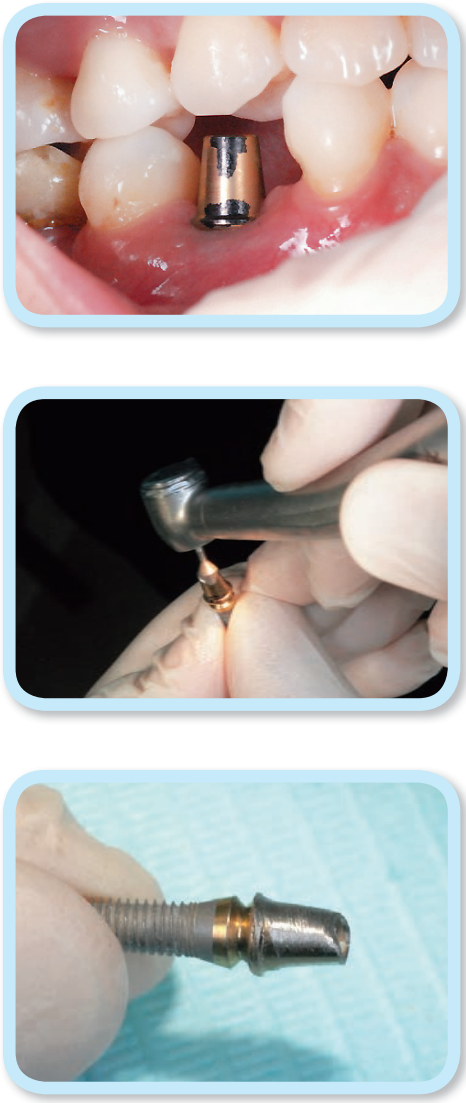
Implant Prosthesis Fabrication

Prosthesis fabrication procedures were performed about five months after the implant was installed. The post height of the abutment was marked and then reduced extra-orally with a diamond bur to achieve 2mm of occlusal clearance for the fabrication of a porcelain fused to metal crown (*Fig. 17*). The cuff height of the abutments was also marked and prepared, to conform to the soft tissue contour. Prior to making the impression,



Figs. 16:
The implant fixture was installed, but the buccal bone plate was less than 2mm thick, and a green-stick fracture was noted on the buccal surface (left). A cover screw was secured and synthetic bone graft material was gently packed over the site (center left). Then, a collagen membrane was positioned over the site (center right), extending within the incision line. The flap was repositioned and sutured (right).

the abutment screw was torqued to 35-N-cm (*Fig. 18*). The screw access hole for the abutment was fitted with a small cotton pledget and closed with a temporary sealing material (*Caviton, GC*). Double core packing impression technique was chosen. A thinner (*KnitTraxTM, #00*) gingival retraction cord for soft tissue compression was placed first. Then a thicker cord (*KnitTraxTM, #1*) for soft tissue reflection was packed in the crevice with a cord packing instrument (*Fig. 19*). When adequate tissue retraction was achieved, a direct impression was made with polyvinyl siloxane impression material. Following the impression, the retraction cords were removed, and the interocclusal index was recorded



■ *Figs. 17:*
After being marked (left), the abutment was reduced (center) and polished to provide clearance for the fabrication of the porcelain fused to metal crown (right).

■ *Fig. 18:*
Before making the impression, the abutment screw was torqued to 35-N-cm with a screw driver and a torque ratchet.

■ *Fig. 19:*
Retraction cord was positioned with a packing-placement instrument (left), and a direct impression was obtained (right).

with bite registration material. The impression was poured in type IV dental stone, and the casts were subsequently mounted on an articulator using the bite record (*Fig. 20*).

Two single, porcelain fused to metal crowns were fabricated by a commercial laboratory for the lower left second premolar and second molar. A similar fixed prosthesis was made to bridge the lower right second premolar and first molar. The marginal integrity was verified with a dental explorer and appropriate tightness of the contact area was confirmed with dental floss. After clinical adjustment and verification of fit and occlusion, the crown removing lugs on the lingual side were trimmed away. The permanent crowns and bridge were then luted into place with permanent cement (*Fig. 20*).

Results Achieved

The final dentofacial result is documented with photographs and casts in Fig. 21. The therapeutic sequence is illustrated with a series of four panoramic radiographs exposed at the following stages during the treatment: start (*0 M*), twenty-three (*23 M*), thirty-two (*32 M*), and forty-nine (*49 M*) months (*Fig. 22*).

Maxilla (*all three planes*):

- A - P: *Maintained*
- Vertical: *Maintained*
- Transverse: *Expanded*

Mandible (*all three planes*):

- A - P: *Retracted*
- Vertical: *Increased*
- Transverse: *Maintained*

Maxillary Dentition

- A - P: *Retracted*
- Vertical: *Maintained*
- Inter-canine Width: *Maintained*
- Inter-molar Width: *Increased*
- Incisor Control: *Retracted and extruded slightly*
- Alignment: *Rotations of teeth #2 and 4*
- Marginal Ridges: *Discrepancies between teeth #2, 3, 15, and 16*

Figs. 20:
The impression was poured in type IV dental stone and sectioned for prosthesis fabrication (left). The final prostheses were completed (center). After subtle adjustments, the permanent crowns were completed and luted into place (right).

Figs. 21: Post-treatment facial, intraoral photographs and dental models (casts)

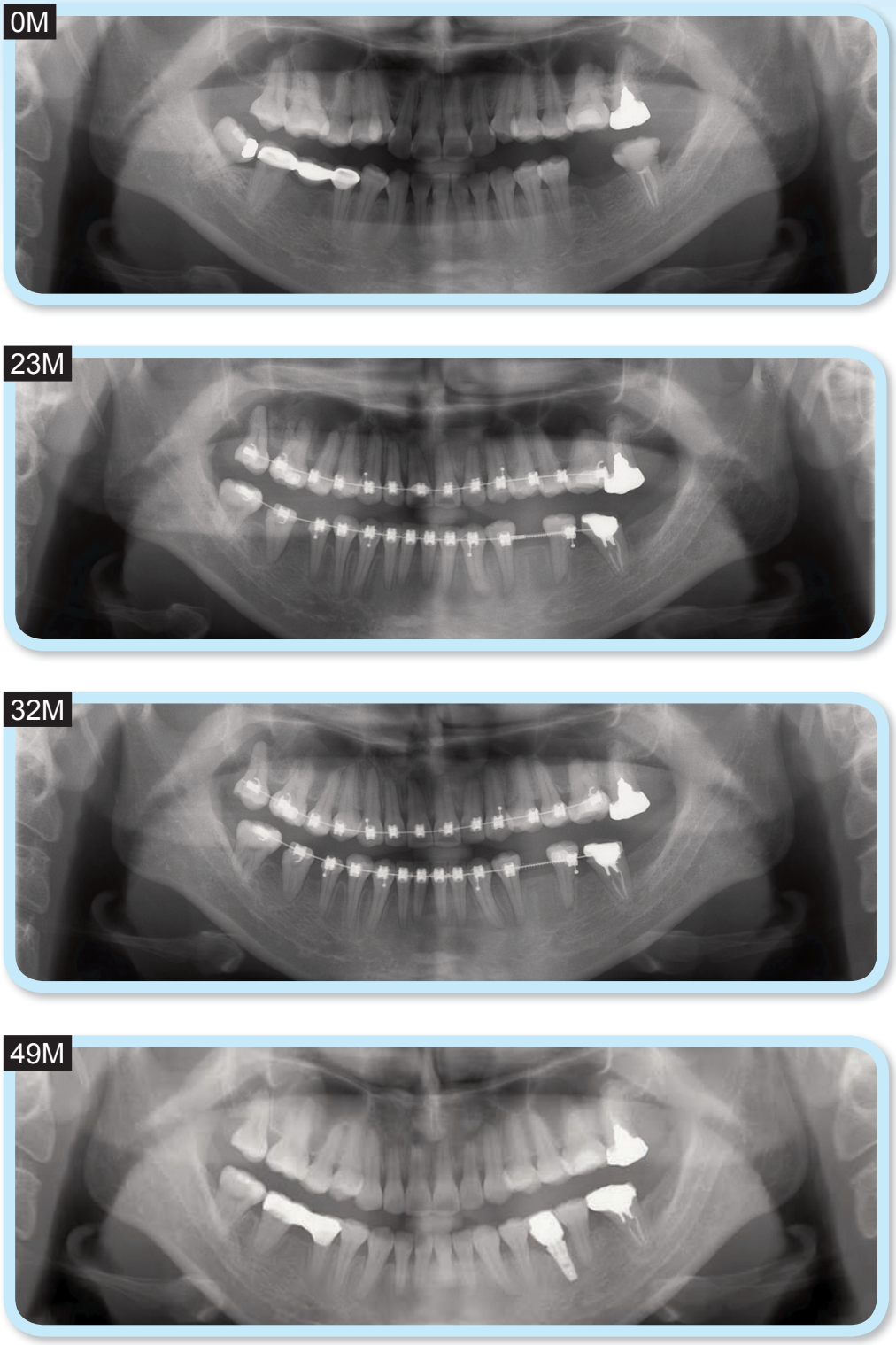


Fig. 22:
The panoramic radiographs show the progress of the treatment at the start (0M), 23 months into treatment (23M), 32 months into treatment (32M), and at the finish, following 49 months of treatment (49M).

- Buccolingual Inclination: *Flaring of teeth #2 and 15*

Mandibular Dentition

- A - P: *Retracted*
- Vertical: *Molars extruded*
- Inter-canine Width: *Decreased*
- Inter-molar Width: *Decreased slightly*
- Incisor Control: *Retracted*
- Alignment (*Rotations*): *Distal-in tooth #19, mesial in tooth #27, and mesial-out tooth #31*
- Marginal Ridges: *Discrepancy between teeth #31 and 32*
- Buccolingual Inclination: *Lingual tipping on teeth #18, 19, and 30*

Facial Esthetics:

- Lower lip retracted to significantly improve the facial profile

Retention

Upper and lower clear overlay retainers were delivered after the fixed appliances were removed. A new lower overlay retainer was made after the completion of the implant-supported crown. The patient was instructed to wear the retainers full time for the first 6 months and nights only thereafter. Home care and retainer maintenance instructions were provided.

Final Evaluation of Treatment

The final alignment was assessed at 32 points with the ABO CRE, as documented on the form that appears later in this report. This was considered an acceptable result for a severe Class III, mutilated malocclusion (*DI=50*), but it was not ideal because of the following discrepancies:

1. Alignment and rotation: 8 points were scored for the buccal positions of the second molars, and distal out rotation of the lower left canine.

2. Marginal ridge discrepancies: 6 points were scored for maxillary premolars and molars.

3. Buccolingual inclination: 10 points were scored for molar discrepancies form ideal.

4. Occlusal contacts: 2 points were scored for the absence of antagonist contacts on second molars.

5. Occlusal relationship: 3 points were scored for interdigitation problems.

6. Root Angulation: 1 point was scored for inadequate alignment of the lower left premolar region.

The Pink and White (*P&W*) score of 3 was excellent for soft and hard tissue esthetics in the maxillary anterior segment, as will be subsequently documented.

Discussion

The current difficult malocclusion (*DI 50*) was corrected with extensive interdisciplinary therapy. Some of the more important aspects of the treatment will be discussed separately.

Bracket Selection

It is well known that upper incisors flare when crowding is corrected without extractions or enamel stripping. This problem is enhanced with the use of Class III elastics. To resist these undesirable changes, low torque braces are indicted for the maxillary incisors (*Fig. 23*). A convenient method for a low torque effect is to bond standard brackets inversely (*upside down*). In this way, the torque value achieved is -12 and -8°, which helps prevent incisal flaring (*Fig. 24*). In addition, the abundant use of Class III elastics tends to tip lower incisors distally, so high torque brackets are indicated. Since there are no high torque brackets designed for lower incisors in the D3MX series, low torque brackets bonded inversely to establish the desires torque (*Fig. 24*).

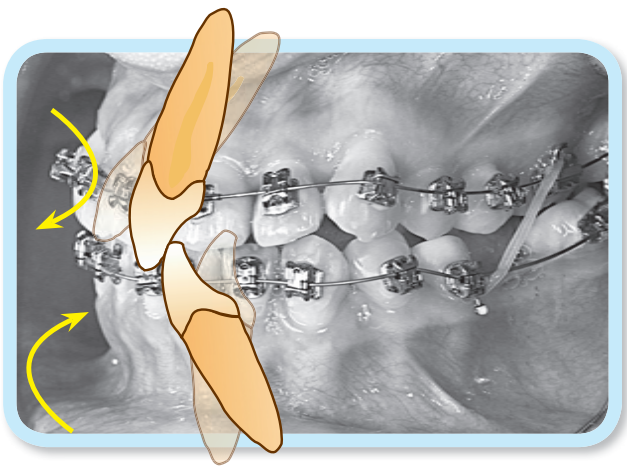


Fig. 23:
Conservative (nonextraction) correction of maxillary anterior crowding and the use of class III elastics tends to flare maxillary incisors and tip mandibular incisors distally. To offset these side effects, decreased torque is required in upper incisor brackets and increased torque is required for lower incisor brackets. For pretorqued brackets, a convenient way to achieve the necessary incisor torque is to bond the incisor brackets inversely (upside down).

Maxillary	1	2	3
High	+17°	+10°	+7°
STD	+12°	+8°	0°
Low	+7°	+3°	---
Mandibular	**1**	**2**	**3**
High	---	+7°	---
STD	-1°	-1°	0°
Low	-6°	-6°	---

	1	2	3
Maxillary	-12°	-8°	0°
Mandibular	+6°	+6°	0°

Fig. 24:
The upper table lists torque values for maxillary and mandibular brackets in the D3MX series as follows: central incisor (1), lateral incisor (2) and canine (3). Inverting the standard (STD) brackets (arrows) results in the torque values listed in the lower table.

Implant Site Development

Orthodontic tooth movement through an edentulous site can increase bone height and width, and also result increased attached gingiva. The critical factor is the health and level of epithelial attachment of the tooth or teeth to be moved into the defect. Theoretically, implant site development[7] can be accomplished in any portion of the alveolar

ridge where an implant is to be placed,[8] and the regenerated bone width is directly related to the buccal-lingual dimension moved through the defect.[9] The bone created by moving a tooth through the edentulous site is relatively stable and the reduction of the alveolar width is relatively small. In a study by Kokich,[7] the loss of bone mass was less than 1% from the end of the treatment to 4 years after treatment. The reduction of the alveolar ridge width was less than 2% from the end of the therapy to 5 years after treatment. the principle of implant site development is also applicable to a narrow alveolar ridge.[10] A significant limitation of the studies cited is the variance that many investigators have noted, particularly in the posterior mandible as will be discussed below.

Consideration for The Present Patient

Before treatment, the width of the edentulous ridge was less than 3.5 mm, which was inadequate for an implant planned. Since avoiding a bone augmentation was desirable, two types of implant site development were considered. The first option was to retract the second premolar into the edentulous first molar area. The other option was to move the second molar into the edentulous space and to place an implant in the second molar area. The first option was chosen: retracting the second premolar to create space for an implant between the premolars on the left side. Advantages for this approach were better surgical access and more predicable production of adequate keratinized

	Implant Site Development *(second premolar retraction 5 -->)* *(second molar protraction <--7)*	Bone Augmentation *(first molar area)*
Orthodontic Treatment Time	Longer to retract the tooth	Less ✓
Recovery Time after Bone Augmentation	No (*sufficient bone*) or less ✓	Longer
Difficulty of Surgery	No (*sufficient bone*) or easier ✓	Complicated (*bone expansion or bone block technique*)
Occlusion	Compromised : 3 premolars + 1 molar 4 5 6 7 4 I_5 5 7 Better : 2 premolars + 2 molars 4 5 6 7 4 5 7 I_7	Best : 2 premolars + 2 molars 4 5 6 7 4 5 I_6 7 ✓

gingiva, which is crucial for maintaining the health of an implant. Another advantage in separating the premolars is maintenance of the interdental papilla. As two teeth are moved apart, the interproximal papilla remains adjacent to the tooth that is not moving, and a red patch, lined with non-keratinized sulcular epithelium, is created in the wake the tooth that is moved. This is called Atherton's Patch.[11] For an adult patient, there is little or no tooth eruption after orthodontic treatment,[11] so the interdental papilla may either fail to completely fill the interdental area, or its regeneration may not take place until long after the completion of orthodontic treatment. According to Tarnow,[12] when the distance from the contact point to the crest of bone is 5 mm or less, the papilla is present almost 100% of the time. However, Grunder[13] reports that the presence of the papilla is primarily determined by the bone support on the tooth side of a restored edentulous space. If there is sufficient soft tissue volume, its height can be increased by applying pressure interproximally to squeeze the papilla vertically, but only minor improvement can be expected with that procedure. Although the mandibular posterior segment is rarely an esthetic problem, inadequate papillae in the interdental areas may contribute to food impaction and soft tissue inflammation. All considered, retracting the second premolar was superior for implant site development compares to protracting the second molar.

However, when the flap was reflected during implant surgery, the buccal bone covering the lower left premolars was very thin, and a green-

Implant Site Development	Second Premolar Retraction (4 I_5 5 7)	Second Molar Protraction (4 5 7 I_7)
Occlusion	Compromised : 3 premolars + 1 molar 4 5 6 7 4 I_5 5 7	Better : 2 premolars + 2 molars 4 5 6 7 4 5 7 I_7 ✓
Keratinized gingiva around implant site	Normal ✓	Decreased / Insufficient
Difficulty of surgery *(implant insertion)*	Easier to approach ✓	Harder
Atherton's Patch	Between I_5 and 5 ✓ (*slightly aesthetics compromised*)	Between 7 and I_7

stick fracture was noticed on the buccal bone labial to the implant. The ridge width in the implant site was ~8mm, which is the approximately the buccal-lingual diameter of the second premolar. Since the gingival thickness was 1.5mm, the residual bone width at the crest was ~5mm, which is marginally adequate for placement of a 3.5mm diameter implant. However, for ridge widths of 4-5mm Wang[14] recommends ridge splitting or expansion to conserve bone, and guided bone regeneration (*GBR*) with a membrane covering may be necessary to optimize the osseous support. The flap design for GBR should be larger than for single implant surgery. *The conclusion from the present experience is that thin buccal bone before treatment is a contraindication for implant site development. Implant site development can create bone to widen an atrophic ridge, but it may not create enough bone for optimal implant support. Although ridge augmentation with bone block graft can be avoided by using the implant site development method, but GBR procedures might still be necessary at the time of implant surgery.*

Implant Replacement

The 3D placement of an implant in an appropriate, restoratively driven position requires careful planning. Mesiodistally, the implant should be placed in the center of the edentulous ridge, no closer than 1.5mm to the nearest tooth. From the buccolingual aspect, it is desirable to place the implant in the middle of the ridge, but it is essential to leave at least a 2mm thick bone plate on the buccal surface. If the bone width of the implant site is inadequate, bone augmentation is needed.

The fixture platform should be placed 3mm deeper than the predetermined final crown margin.[15] The angulation of the implant should be parallel to the adjacent teeth, and any discrepancy should be no larger than 15 degrees. During the initial implant healing phase, there is a delicate balance between the bone resorption and formation events that compose the modeling and remodeling aspects of wound healing. Osseointegration is achieved by remodeling the dead bone supporting the implant interface. After implant placement, primary mechanical stability is gradually replaced by the secondary biological stability achieved by remodeling the interface.[16,17] The first 2 to 3 weeks after implant placement is the most critical aspect of the healing period for humans, because the interface can be disrupted, leading to excessive mobility.

Relapse of Closed Space

Removing the existing fixed prosthesis (*Fig. 22*) from the lower right posterior segment exposed an edentulous area about 10mm in length. Since the second and third molars were present in that quadrant, space closure was indicated. Thirty-two months of molar protraction successfully closed the space, but it reopened again after only two months. There are multiple factors relating to the relapse of space closure.

Periodontal Factor: Teeth are retained in the alveolar bone by the following groups of supportive

fibers: (*1*) Circular fibers run in the free gingiva and encircle the tooth; (*2*) Dento-gingival fibers are embedded in the cementum of the supra-alveolar portion of the root and project from the cementum into the free gingival tissue; (*3*) Dento-periosteal fibers are embedded in the cementum of the supra-alveolar portion of the root but terminate in the tissue of the attached gingiva; (*4*) Transseptal fibers run straight across the interdental septum and are embedded in the cementum of adjacent teeth. When a tooth is extracted the interdental transeptal fibers are disrupted. As an extraction space is closed, the supracrestal fibers are compressed between approximating teeth, but there are no natural transeptal fibers connecting the newly contacting teeth, so the relapse of space closure is probable.[18] Atherton[11] noted that the approximating teeth appear to push and compress the gingiva, creating a fold of epithelial and connective tissue rather than moving through the soft tissue. The tissue compressed by space closure may provide force to reopen the space after it is closed. This undesirable sequelae is not a pathologic phenomenon, but just an unwanted aspect of normal physiology. Contrary to periodontal ligament, the collagen component of the supracrestal fibers has a very low rate of turnover, and may never fully adapt to the therapeutic change in tooth position. Fortunately, surgical fiberotomy and intervention to remove excess interdental soft tissue generates a scar-type healing reaction that has a positive effect on retention of space closure.

Dental Factor: Natural spacing in a dental arch presents one of the highest potentials for relapse when space is closed. Bonded buttons are effective for applying force on the lingual surface and for retaining space closure. A relapse of space closure can be addressed by re-closing the space and simultaneously performing a supracrestal fiberotomy. With respect to the present patient, fixed appliance retention of the buccal space closure was planned by restoring the approximated teeth with splinted crowns, so the less than 1.5mm of space reopening was easily resolved with a small metal pontic, bridging the two teeth. When closing large spaces, it is better to perform a gingivectomy during space closure whenever excess tissue appears in extraction site. *Tight space closure followed by surgical intervention to generate scar tissue is a practical biological method for eliminating the reopening of closed extraction sites.*

For the present patient, the blocked-out maxillary cuspids were due a severe tooth size to arch length discrepancy. Aligning the maxillary anterior segment, without extractions or enamel stripping, usually results in incisal flaring, and Class III elastic intensify the problem (*Fig. 23*). Bilateral miniscrews were used in the IZC to retract the entire maxillary arch. The camouflage treatment to correct the Class III buccal segments resulted in a final CRE score of 32 points, which deviated from ideal primarily in three categories: alignment/rotation, marginal ridges and buccolingual inclination.

Buccolingual inclination alone lost 12 points which indicates the lack of upper and lower buccal root torque, especially on second molars. Detailing with

third order wire bending is particularly important when arch widths are changed during treatment. Particularly for Class III patients with a transverse skeletal discrepancy, correction of buccal-lingual axial inclinations must be handled carefully to avoid gingival and/or bone clefting.

Alignment/rotation and marginal ridges lost 8 and 6 points, respectively. These deficiencies reflect bracket bonding problems and inadequate detailing adjustments during the final stage of treatment. It is often difficult to see these subtle changes clinically, so it is wise to collect prefinish records, particularly casts, about 6 months before the anticipated finish of treatment. The casts can then be scored with the CRE method to identify problems that can be corrected with bracket repositioning or wire bending during the finishing phase.[19-21]

Superimposition of the cephalometric tracings (*Fig. 5*) show the maxillary position was maintained, but the mandibular position was increased vertically, due to extrusion the molars. Both the maxillary and mandibular arches were retracted with extra alveolar bone screws, but the retraction was more pronounced in the lower arch because of the Class III elastics. The incisal tipping that usually results from Class III elastics was prevented by decreasing the bracket torque on maxillary incisors and increasing it for the mandibular incisors.

In conclusion, abundant application of Class III elastics, to conservatively resolve crowding in the maxillary anterior segment, typically flares the upper incisors. This problem can be resolved by decreasing the torque of the maxillary incisor brackets and then retracting the entire upper arch with bone screws placed in the IZC areas. In contrast with the conventional molar anchorage, bone screws provide osseous anchorage for dental correction that is not deleterious to the facial profile.

Conclusion

A severe skeletal malocclusion, with multiple missing teeth in the lower arch, was treated conservatively with extra-alveolar anchorage and implant therapy. Implant site development increased the width of the edentulous space, but did not produce sufficient bone for the implant, so ridge augmentation after the implant was placed was necessary with GTR.

Acknowledgment

Thanks to Dr. Chuan Wei Su for his instruction and Mr. Paul Head for his proofreading.

References

1. Pitts T. Begin with the end in mind: bracket placement and early elastics protocols for smile arc protection. Clinical Impressions 2009;17(1):4-13.
2. Yeh HY. Beethoven Orthodontic Center's Effective Bonding Procedure. Int J Ortho Implantol 2013;33:102-108.
3. Bagden A. Review: A conversation. The Damon system: questions and answers. Clinical Impressions 2005;14(1):4-13.
4. Steffen JM, Haltom FT. The five-cent tooth positioner. J Clin Orthod 1987;21:528-529.
5. Chang CH, Roberts WE. Stability of mini-screws on buccal shelves: a retrospective study of 1680 mini-screw insertions by the same orthodontist. Int J Orthod Implantol 2013;30:76-78.
6. Chang CH, Roberts WE. A Retrospective Study of the Extra-alveolar Screw Placement on Buccal Shelves. Int J Orthod Implantol 2013;32:80-89.
7. Kokich VG. Maxillary lateral incisor implants: planning with the aid of orthodontics. Int J Oral Max Surg 2004;62:48-56.
8. Zachrisson BU. Orthodontic tooth movement to regenerate new alveolar tissue and bone for improved single implant aesthetics [abstract]. Eur J Orthod 2003;25:442.
9. Nováčková S, Marek I, Kamínek M. Orthodontic tooth movement: bone formation and its stability over time. Am J Orthod Dentofacial Orthop 2011;139(1):37-43.
10. Proffit WR, Fields HW. Contemporary orthodontics. 3th ed. St Louis: Mosby; 2000.
11. Atherton JD, The gingival response to orthodontic tooth movement. Am J Orthod 1970;58(2):179-86.
12. Tarnow DP, The Effect of the Distance From the Contact Point to the Crest of Bone on the Presence or Absence of the Interproximal Dental Papilla. J Periodontal 1992;63(12):995-6
13. Grunder U, Gracis S, Capelli M. Influence of the 3-D bone-to-implant relationship on esthetics. Int J Perio Rest Dent 2005;25(2):113-9.
14. Fu JH, Wang HL. Horizontal bone augmentation: the decision tree. Int J Perio Rest Dent 2011;31(4):429-36.
15. Chang CH. The 2B-3D rule for implant planning, placement and restoration. Int J Orthod Implantol 2012;27:79-101.
16. Berglundh T, Abrahamsson I, Lang NP, Linde J. De novo alveolar bone formation adjacent to endosseous implants. Clin Oral implan Res 2003;14(3):251-62.
17. Raghavendra KM, Wood MC, Taylor TD. Early wound healing around endosseous implants: a review of the literature. Int J Oral Max Impl 2005;20(3):425-31.
18. Rönnerman A, Thilander B, Heyden G. Gingival tissue reactions to orthodontic closure of extraction sites. Histologic and histochemical studies. Am J Orthod 1980;77(6):620-25.
19. Chang CH. Advanced Damon Course No. 8: Excellence in Finishing, Beethoven Podcast Encyclopedia in Orthodontics [podcast]. Hsinchu: Newton's A Ltd; 2011.
20. Chang CH. Basic Damon Course No. 5: Finish Bending, Beethoven Podcast Encyclopedia in Orthodontics [podcast]. Hsinchu: Newton's A Ltd; 2011.
21. Chang CH. Advanced Damon Course No. 4,5 : DI & CRE Workshop (1)(2), Beethoven Podcast Encyclopedia in Orthodontics [podcast]. Hsinchu: Newton's A Ltd; 2011.
22. Su B. IBOI Pink & White Esthetic Score. Int J Orthod Implantol 2012;28:80-85.

Discrepancy Index Worksheet

TOTAL D.I. SCORE 44

OVERJET

0 mm. (edge-to-edge)	=	
1 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
7.1 – 9 mm.	=	4 pts.
> 9 mm.	=	5 pts.

Negative OJ (x-bite) 1 pt. per mm. per tooth =

Total = 15

OVERBITE

0 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
Impinging (100%)	=	5 pts.

Total = 2

ANTERIOR OPEN BITE

0 mm. (edge-to-edge), 1 pt. per tooth
then 1 pt. per additional full mm. per tooth

Total = 0

LATERAL OPEN BITE

2 pts. per mm. per tooth

Total = 0

CROWDING (only one arch)

1 – 3 mm.	=	1 pt.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	4 pts.
> 7 mm.	=	7 pts.

Total = 7

OCCLUSION

Class I to end on	=	0 pts.	
End on Class II or III	=	2 pts. per side	____ pts.
Full Class II or III	=	4 pts. per side	8 pts.
Beyond Class II or III	=	1 pt. per mm. additional	____ pts.

Total = 8

LINGUAL POSTERIOR X-BITE

1 pt. per tooth Total = 3

BUCCAL POSTERIOR X-BITE

2 pts. per tooth Total = 0

CEPHALOMETRICS (See Instructions)

ANB ≥ 6° or ≤ -2° = 4 pts.

Each degree < -2° _____ x 1 pt. = _____

Each degree > 6° _____ x 1 pt. = _____

SN-MP

≥ 38° = 2 pts.

Each degree > 38° _____ x 2 pts. = _____

≤ 26° = 1 pt.

Each degree < 26° 4 x 1 pt. = _____

1 to MP ≥ 99° = 1 pt.

Each degree > 99° 2 x 1 pt. = 2

Total = 0

OTHER (See Instructions)

Supernumerary teeth	_____ x 1 pt. =	_____
Ankylosis of perm. teeth	_____ x 2 pts. =	_____
Anomalous morphology	_____ x 2 pts. =	_____
Impaction (except 3rd molars)	_____ x 2 pts. =	_____
Midline discrepancy (≥3mm)	@ 2 pts. =	_____
Missing teeth (except 3rd molars)	_____ x 1 pts. =	2
Missing teeth, congenital	_____ x 2 pts. =	_____
Spacing (4 or more, per arch)	_____ x 2 pts. =	2
Spacing (Mx cent. diastema ≥ 2mm)	@ 2 pts. =	_____
Tooth transposition	_____ x 2 pts. =	_____
Skeletal asymmetry (nonsurgical tx)	@ 3 pts. =	_____
Addl. treatment complexities	_____ x 2 pts. =	2

Identify: 6 mm of excessive gingival display

Total = 6

IMPLANT SITE

Lip line : Low (0 pt), Medium (1 pt), High (2 pts) = _____

Gingival biotype : Low-scalloped, thick (0 pt), Medium-scalloped, medium-thick (1 pt), High-scalloped, thin (2 pts) = _____

Shape of tooth crowns : Rectangular (0 pt), Triangular (2 pts) = _____

Bone level at adjacent teeth : ≤ 5 mm to contact point (0 pt), 5.5 to 6.5 mm to contact point (1 pt), ≥ 7mm to contact point (2 pts) = _____

Bone anatomy of alveolar crest : H&V sufficient (0 pt), Deficient H, allow simultaneous augment (1 pt), Deficient H, require prior grafting (2 pts), Deficient V or Both H&V (3 pts) = 3

Soft tissue anatomy : Intact (0 pt), Defective (2 pts) = _____

Infection at implant site : None (0 pt), Chronic (1 pt), Acute(2 pts) = _____

Total = 3

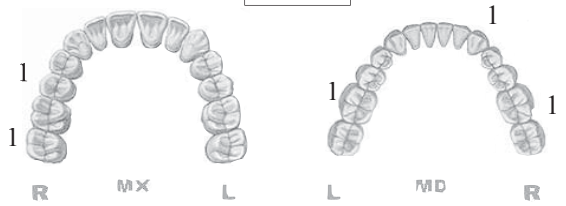
Cast-Radiograph Evaluation

POST-TREATMENT

Total Score: 32

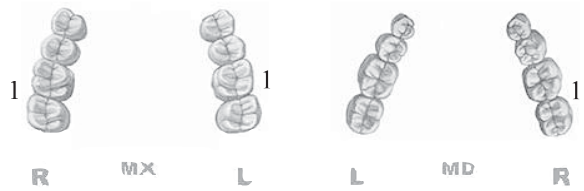
Alignment/Rotations

8



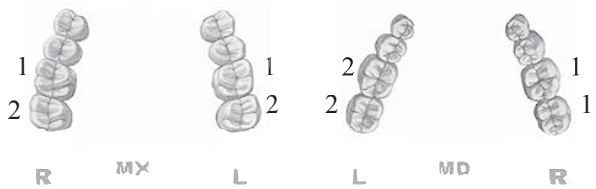
Marginal Ridges

6



Buccolingual Inclination

10

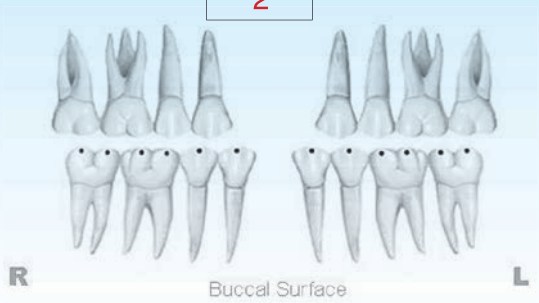


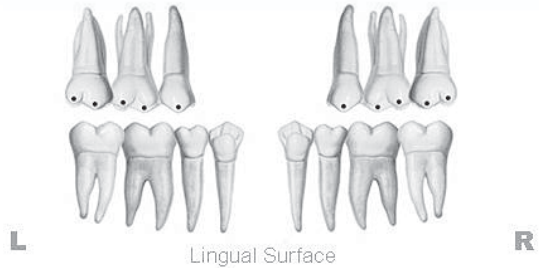
Overjet

2

Occlusal Contacts

2



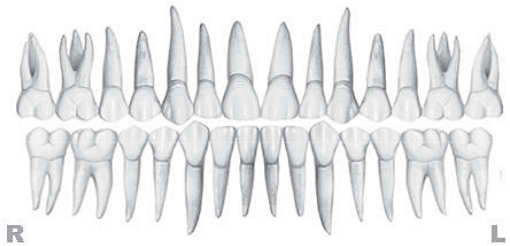


Occlusal Relationships

3

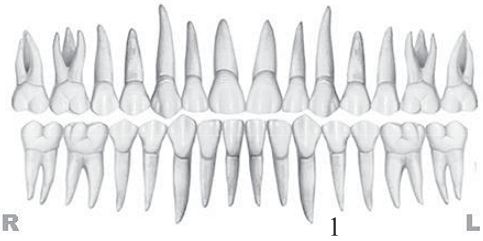
Interproximal Contacts

0



Root Angulation

1



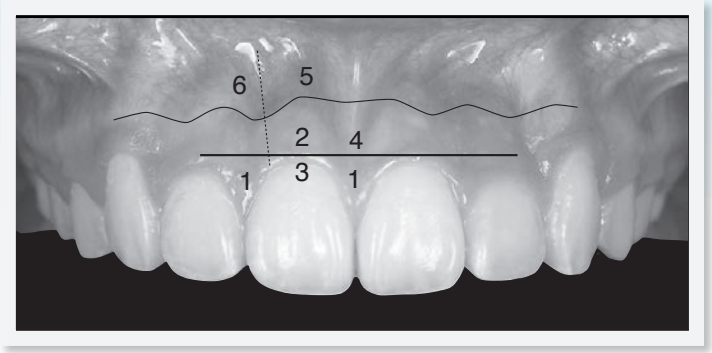
INSTRUCTIONS: Place score beside each deficient tooth and enter total score for each parameter in the white box. Mark extracted teeth with "X". Second molars should be in occlusion.

IBOI Pink & White Esthetic Score (Before Surgical Crown Lengthening)

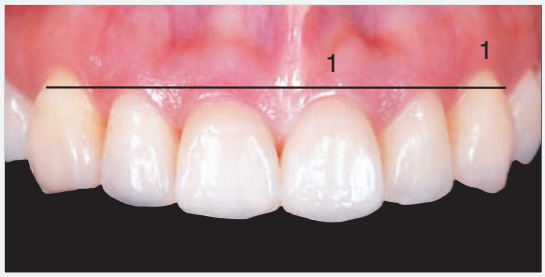
Total Score: = 3

1. Pink Esthetic Score

Total = 2



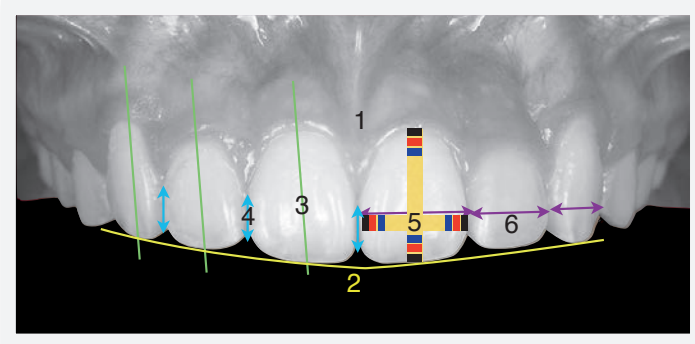
1. Mesial Papilla	0	1	2
2. Distal Papilla	0	1	2
3. Curvature of Gingival Margin	0	1	2
4. Level of Gingival Margin	0	1	2
5. Root Convexity (Torque)	0	1	2
6. Scar Formation	0	1	2



1. M & D Papilla	(0)	1	2
2. Keratinized Gingiva	(0)	1	2
3. Curvature of Gingival Margin	(0)	1	2
4. Level of Gingival Margin	0	1	(2)
5. Root Convexity (Torque)	(0)	1	2
6. Scar Formation	(0)	1	2

2. White Esthetic Score (for Micro-esthetics)

Total = 1

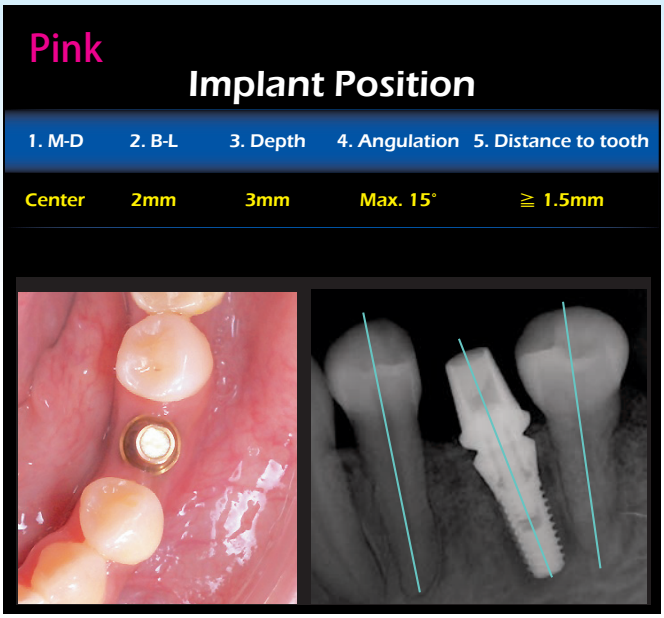


1. Midline	0	1	2
2. Incisor Curve	0	1	2
3. Axial Inclination (5°, 8°, 10°)	0	1	2
4. Contact Area (50%, 40%, 30%)	0	1	2
5. Tooth Proportion (1:0.8)	0	1	2
6. Tooth to Tooth Proportion	0	1	2

1. Midline	(0)	1	2
2. Incisor Curve	(0)	1	2
3. Axial Inclination (5°, 8°, 10°)	0	(1)	2
4. Contact Area (50%, 40%, 30%)	(0)	1	2
5. Tooth Proportion (1:0.8)	(0)	1	2
6. Tooth to Tooth Proportion	(0)	1	2

Implant-Abutment Transition & Position Analysis

1. Implant Position

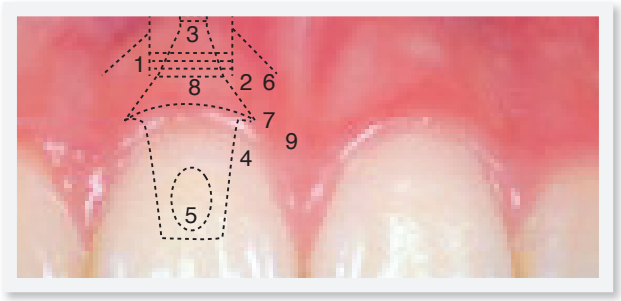


Total = 3

1. M & D (Center)	0	1	2
2. B & L (Buccal 2 mm)	0	1	2
3. Depth (3 mm)	0	1	2
4. Angulation (Max. 15°)	0	1	2
5. Distance to Adjacent Anatomy	0	1	2

1. M & D (Center)	(0)	1	2
2. B & L (Buccal 2 mm)	(0)	1	2
3. Depth (3 mm)	(0)	1	2
4. Angulation (Max. 15°)	0	1	(2)
5. Distance to Adjacent Anatomy	0	(1)	2

2. Abutment transition Contour



E : external connection,
I : internal connection,
S : screw type,
C : cement type,
P : palatal/central,
B : buccal

1. Fixture Cervical Design	N	Y			
2. Platform Switch	N	Y			
3. I-A Connection Type	E	I			
4. Abutment Selection	S	C			
5. Screw Hole Position	P	B			
6. Marginal Bone Loss	N	Y	0	1	2
7. Modified Gingival Contour	N	Y	0	1	2
8. Gingival Height	N	Y	0	1	2
9. Crown margin fitness	N	Y	0	1	2

1. Fixture Cervical Design	N	(Y)			
2. Platform Switch	(N)	Y			
3. I-A Connection Type	E	(I)			
4. Abutment Selection	S	(C)			
5. Screw Hole Position	(P)	B			
6. Marginal Bone Loss	N	(Y)	0	(1)	2
7. Modified Gingival Contour	(N)	Y	0	1	2
8. Gingival Height	N	(Y)	0	(1)	2
9. Crown margin fitness	(N)	Y	0	1	2

Beethoven International Damon, OBS & VISTA Workshop

2015 12/1~12/4, **2016** 4/26-29, 10/18-21

LECTURER: Dr. Chris Chang

CEO, Beethoven Orthodontic and Implant Group. He received his PhD in bone physiology and Certificate in Orthodontics from Indiana University in 1996. As publisher of ***International Journal of Orthodontics & Implantology***, he has been actively involved in the design and application of orthodontic bone screws.

LECTURER: Dr. John Lin

President of the Jin-Jong Lin Orthodontic Clinic. Dr. Lin received his MS. from Marquette University and is an internationally renowned lecturer. He's also the author of Creative Orthodontics and consultant to ***International Journal of Orthodontics & Implantology.***

Dear Chris:

[...] My development as lecturer and orthodontist has evolved greatly. Thanks to this great experience, I came back from Taiwan with the best and latest technique, knowledge, valuable and practical tools, including how to make successful presentations using the resources of MAC technology-rightly led by you in your country. I have also received invaluable and unparalleled academic material on the proper use, benefits and applications of mini-implants.

I will always be thankful not only to you but also to your friendly and dedicated wife, your clinic team in which I found a model for organization, care and functionality. I will never forget all the attentions received and all the time spent on my professional development regardless of the multiple occupations andother responsibilities you all have[...].

Dr. Patricia Vergara Villarreal (right)
Orthodontist, the Military University.CIEO. of Bogota

Dear Chris:

[...]I can only say that the Workshop exceeded my expectation and it was truly amazing. Lectures by the world class orthodontists (*Dr. Chris Chang and Dr. John Lin*), and wealth of knowledge from your many years of dedication, wisdom, and clinical experiences were evident through the cases you presented. I am also very much appreciative of the opportunity to observe you actively and effortlessly practicing what you teach through the chair-side observation session held in your very busy practice.

First, as an innovative educator, you encouraged us to be innovative. Second, you taught us your system and showed us tools in Damon and OBS for us to succeed and duplicate it in each of our own practices. Third, you motivated us to continue to continually improve the system. Personally, I am very grateful and thankful for these three pieces of advice you gave to us[...].

John K.S. Tong, DDS, MAGD
Cupertino, California USA

For more information and registration, visit

http://iworkshop.beethoven.tw

YouTube Newtonsa0301

Like *Chris Chang* On Facebook

VISTA for Impacted Cuspids In-house Workshop (Pig Jaw)

VISTA for Impacted Cuspids in-office workshop includes one half-day hands-on practice:

1. VISTA with Screw Placement
2. VISTA with Connective Tissue Graft
3. Suture Technique

VISTA:
Vertical **I**ncision **S**ubperiosteal **T**unnel **A**ccess

Damon, OBS & VISTA

Day 1

13:00—14:00	Welcome Lunch
14:00—14:40	Orientation
14:40—15:00	Introduction of Beethoven Dental Group
15:00—18:30	Chair-side observation

Day 2

9:00—10:30	Optimized Orthodontic Treatment I *Dr. Chris Chang*
10:30—11:00	Break
11:00—12:30	Optimized Orthodontic Treatment II *Dr. Chris Chang*
12:30—13:50	Lunch
14:00—15:00	Screw Model Practice
15:00—18:30	Chair-side observation

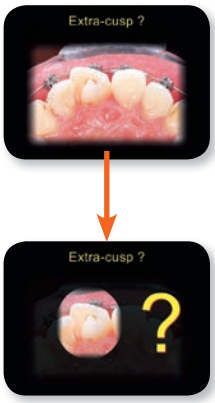
Day 3

09:00—10:00	VISTA for Impacted Cuspids
10:00—10:10	Break
10:10—12:30	Damon + Screw *Dr. John Lin*
12:30—13:30	Lunch
14:00—17:00	VISTA for Impacted Cuspids In-office Workshop (*Pig Jaw*)

Keynote Workshop

Make your presentation great

"I've been a Keynote user and lecturer for 9 years. In June I had the opportunity to attend Newton's A's Introductory Keynote course. To my surprise, I still learn a lot from this supposed to be basic course.



If you think this is a computer course that will show you step-by-step how to use the application, please reconsider. This course is to teach you hands-on, clinical presentation tips. After this course I'm sure that any of you can go back and give a better presentation in your daily dental practice.

If you want to improve communication in your practice, and with patients, this 8-hour course is definitely worth it."

~ Dr. Rungsi Thavarungkul, Thailand
Lecturer, Advanced Keynote Animation and Illustration Workshop

Day 4 - Keynote

09:00—10:00	Introduction of Keynote: Organize your patient files for presentation
10:00—10:10	Break
10:10—11:30	Key Presentation Principles I
11:30—13:30	Lunch
14:00—15:30	Key Presentation Principles II
15:30—15:45	Break
15:45—17:00	Make it Visual

Damon & OBS Workshop

includes two half-day lectures, two half-day chair-side observation sessions, one model practice and one surgical hands-on session.

Registration fees cover local transportation, meals and two nights of shared accommodation (double occupancy). Airport pick up is available upon request with additional charges.

Fees: USD 2,600
Early bird rate: USD 200 off
by **2015** 10/1, **2016** 2/26, 8/18

Keynote Presentation workshop

includes one day of lecture and hands-on practice, focusing on improving your professional digital communication skills. The workshop adopts the Macintosh (Apple) system and its native presentation software, Keynote '09.

Registration fees cover local transportation, meals and one nights of shared accommodation (double occupancy).

Fees: USD 500
Early bird rate: USD 100 off
by **2015** 10/1, **2016** 2/26, 8/18

Registration:

A 50% deposit is required to complete registration.

To make a payment by wire, please contact us at course@newtonsa.com.tw or call +886-3-5735676 for more information.

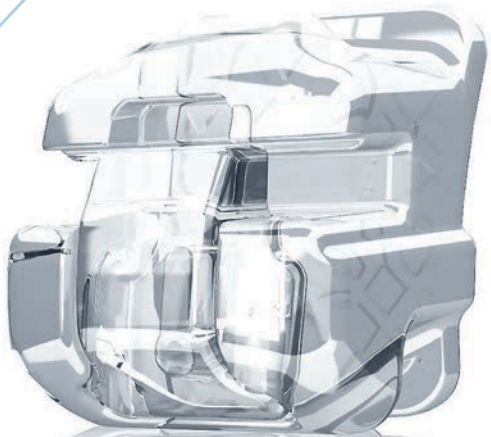
NEW

Ormco
Your Practice. Our Priority

DAMON™ CLEAR2

Introducing the 100% clear self-ligating bracket with 2x the rotational control* for meticulous finishing and efficient treatment. An aesthetic solution for image-conscious adults and teens, Damon Clear provides the performance and control needed to treat a wide variety of cases with outstanding results.

*As compared to Damon Clear, data on file. Standard torque, upper3-3 brackets.



FOUR SOLID WALLS WITH NEW ULTRA-PRECISION SLOT

For 2x the rotational control providing meticulous finishing and faster treatment.

100% CLEAR

For the superior aesthetics that patients demand

ROUNDED CONTOURS

For superb patient comfort.

PATENTED LASER-ETCHED PAD

For optimal bond strength and reliability.

INNOVATIVE SPINTEK™ SLIDE

For quick and easy wire changes.

Kerr™

Your practice is *our* inspiration.™

Bite Registration
2 - Cartridges (50 ml each)
6 - Mixing tips
6 - Intra-oral tips

Take 1 Advanced **Bite Registration**

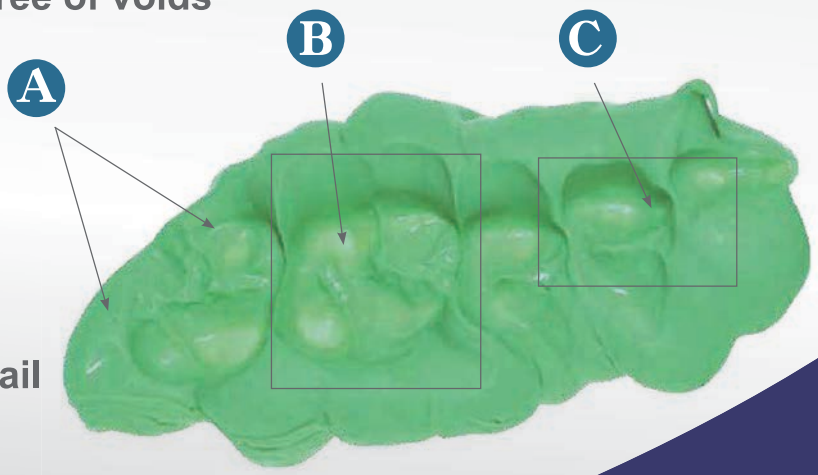
加成型印模材

Take 1 Advanced Bite completes the Take 1 Advanced portfolio providing you a complete solution within a single family of products.

A Material is uniform and free of voids

B Exceptional contact

C Excellent anatomical detail



Crowding, Protrusion and Scissors Bite: Extractions and Extra-Alveolar Bone Screws

Summary

A 16 year female presented with marked functional and esthetic deficits secondary to crowded, asymmetric malocclusion with bimaxillary protrusion and incomplete, bilateral posterior buccal cross-bite (scissors bite). The Discrepancy Index (DI) was 29 for this severe malocclusion. All four first premolars were extracted to resolve crowding and lip protrusion. The buccal crossbites were corrected with trans-arch elastics anchored by extra-alveolar (E-A) OrthoBoneScrews (OBSs) placed in the mandibular buccal shelves, bilaterally. Alignment was achieved with a passive self-ligating appliance and bite turbos. This severe malocclusion was corrected with only 21 months of active treatment. Outcomes for the pleasing result were a Cast-Radiograph Evaluation of 24, and a pink & white dental esthetics score of 4. Follow-up records one year after treatment documented the stability of the result. (Int J Orthod Implantol;39:54-70)

Key words:
Self-ligating fixed appliance, bilateral buccal crossbite, bite turbos, bone screw anchorage, mandibular buccal shelf.

History and Etiology

A 16-year-3-month girl presented with concern about decreased masticatory function due to lingual tipping of her posterior teeth, lip protrusion, and a small maxillary midline diastema with a black triangle (*Figs. 1-3*). The facial profile (*convexity*) was good, but there was a bimaxillary protrusion with a particularly prominent lower lip. Neither the medical nor dental histories were contributory. Moreover, there was no evidence of contributing oral habits or temporomandibular dysfunction. The patient was treated to an acceptable result, as shown in Figs. 4-9. The diagnosis, treatment and outcomes for this challenging malocclusion are discussed in detail.

Diagnosis

Skeletal:

- Class I (*SNA 90 °, SNB 88 °, ANB 2°*)
- Low mandibular plane angle (*SN-MP 30°, FMA 23°*)
- Condylar heads symmetric in length and position (*Fig. 10*)

Dental:

- Mandibular dental midline was 2mm to the left of the facial and maxillary midlines.
- Small maxillary midline diastema with a black triangle
- Bilateral Class I canine and molar relationships

Dr. Hui-Hwa Chen,
Lecturer, Beethoven Orthodontic Course (Left)

Dr. Chris Chang,
Founder, Beethoven Orthodontic Center
Publisher, International Journal of Orthodontics& Implantology (middle)

W. Eugene Roberts,
Consultant, International Journal of Orthodontics & Implantology (right)

Fig. 1: Pre-treatment facial photographs

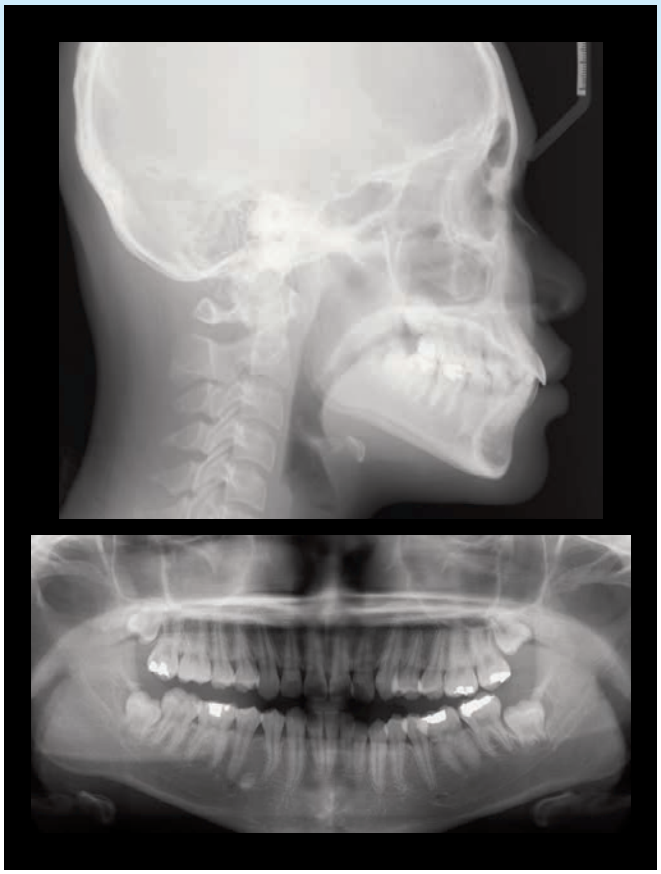
Fig. 4: Post-treatment facial photographs

Fig. 2:
Pre-treatment intraoral photographs revealed severe crowding and buccal crossbite

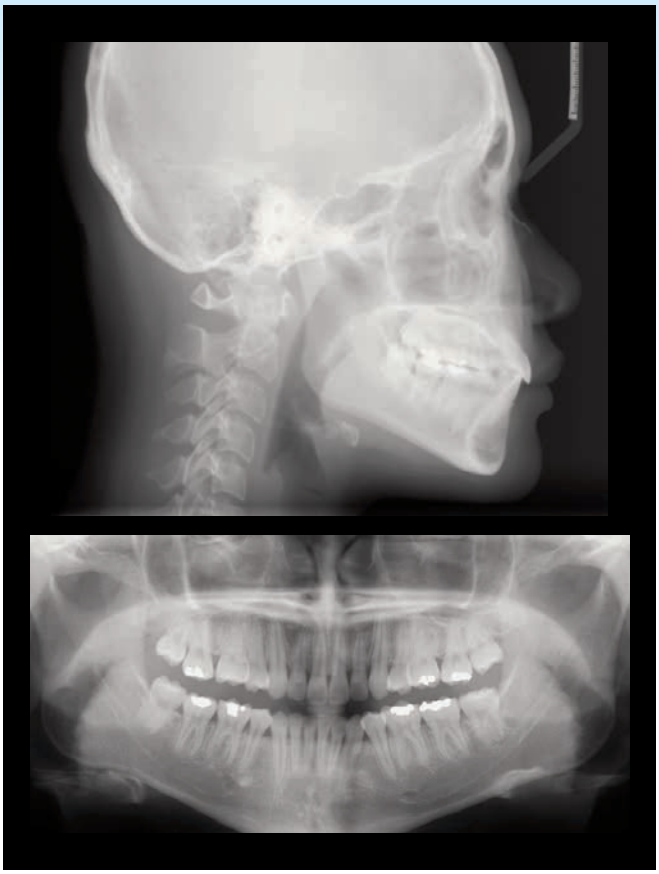
Fig. 5:
Post-treatment intraoral photographs

Fig. 3: Pre-treatment study models (casts)

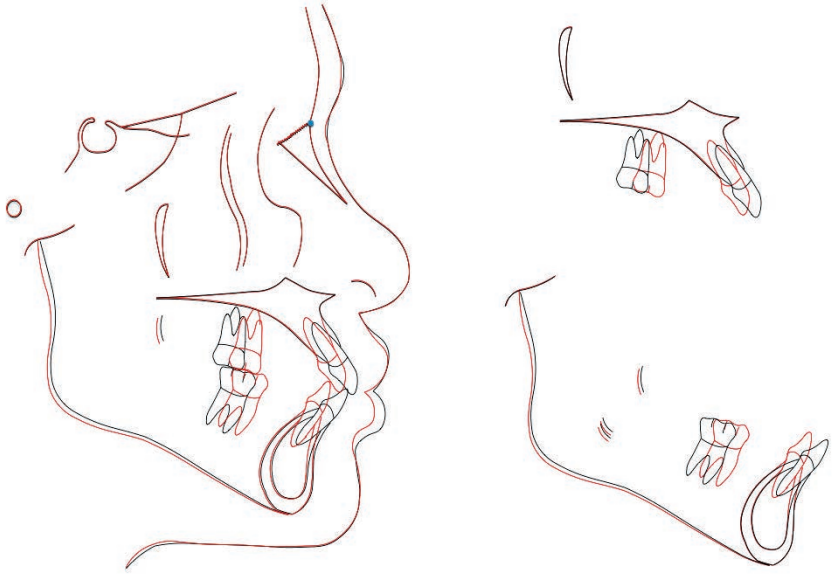
Fig. 6: Post-treatment study models (casts)



■ *Fig. 7:*
Pre-treatment cephalometric and panoramic radiographs show the crowded dentition and four un-erupted 3rd molars.



■ *Fig. 8:*
Post-treatment cephalometric and panoramic radiographs document the alignment of the dentition and change in facial profile after extracting four premolars and closing space.



■ *Fig. 9:*
Superimposed tracings of pre-treatment (black) and post-treatment (red) cephalometric radiographs show the retraction of the incisors and protraction of the buccal segments in both arches.

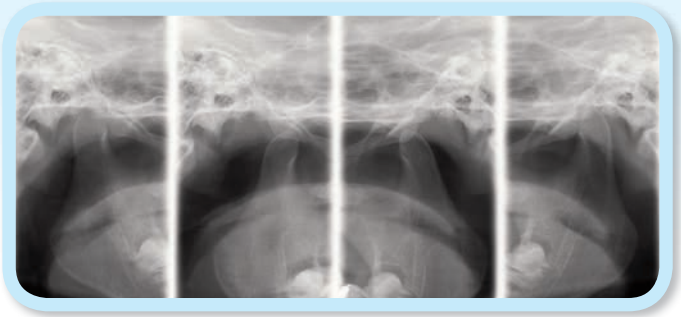


Fig. 10:
The morphological symmetry of the condyle heads is documented for the open (two center views) and closed (two outer views) positions, for the left and right condyles, respectively.

- Lingual crossbite of the maxillary left lateral incisor (*#10*)
- Buccal crossbite of three molars: *one on the right (#2), and two on the left (#14 &15)*

Facial:

- Lower lip protruded

The American Board of Orthodontics (*ABO*) Discrepancy Index (*DI*) was 29

Specific Objectives of Treatment

1. Resolve maxillary and mandibular crowding.

2. Correct bilateral buccal crossbites.

3. Achieve an ideal overjet and overbite relationship.

Maxilla (*all three planes*):

- A - P: *Maintain*
- Vertical: *Maintain*
- Transverse: *Maintain*

CEPHALOMETRIC			
SKELETAL ANALYSIS			
	PRE-Tx	POST-Tx	DIFF.
SNA°	90°	90°	0°
SNB°	88°	88°	0°
ANB°	2°	2°	0°
SN-MP°	30°	29°	1°
FMA°	23°	22°	1°
DENTAL ANALYSIS			
U1 TO NA mm	7 mm	5 mm	2 mm
U1 TO SN°	115°	112°	3°
L1 TO NB mm	9 mm	3 mm	6 mm
L1 TO MP°	106°	95°	11°
FACIAL ANALYSIS			
E-LINE UL	-0.5 mm	0 mm	0.5 mm
E-LINE LL	2 mm	-0.5 mm	2.5 mm

Table 1: Cephalometric summary

Mandible (*all three planes*):

- A - P: *Maintain*
- Vertical: *Maintain*
- Transverse: *Maintain*

Maxillary Dentition:

- A - P: *Retract incisors*
- Vertical: *Intrude incisors*
- Inter-molar/Inter-canine Width: *Maintain*

Mandibular Dentition:

- A - P: *Retract incisors and decrease their axial inclination*
- Vertical: *Maintain*
- Inter-molar/Inter-canine Width: *Maintain*

Facial Esthetics:

- Reduce lower lip protrusion

Treatment Plan

1. Extract all four first premolars (#*5, 12, 21, 28*) to resolve crowding (*Fig. 11*) .

2. Reduce bimaxillary protrusion to improve lip profile.

3. Place an extra-alveolar (*E-A*) OrthoBoneScrew® (*Newton's A, Hsinchu City, Taiwan*) in each buccal shelf of the mandible (*Fig. 11*) to serve as anchorage for elastics to correct the lingually tipped molars (#*18, 19 and 31*).

4. Intermaxillary elastics to correct the sagittal discrepancy.

5. Detail occlusion with finishing bends and settling elastics.

6. Retention with clear overlay retainers in both arches.

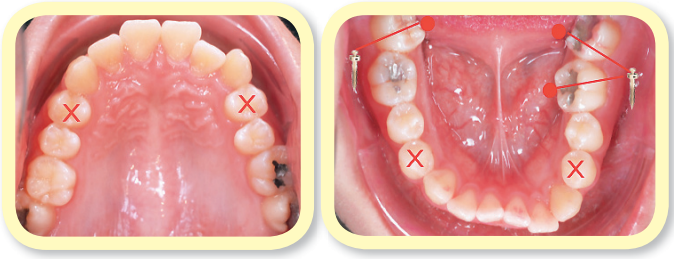


Fig. 11:
The treatment plan was to relieve crowding in both arches by extracting all four first premolars (X). Extra-alveolar bone screws were placed the mandibular buccal shelves, lateral to the molars, to provide anchorage for intrusion and alignment of the lingually tipped mandibular molars (right).

Appliances and Treatment Progress

A .022" slot Damon Q® passive self-ligating (*PSL*) bracket system (*Ormco, Glendora, CA*) was selected. High torque brackets were bonded on the maxillary incisors and the arch was aligned with an .014" CuNiTi archwire (*Fig. 12*). Bite turbos, constructed with Fuji II® glass ionomer cement, were placed on the occlusal surfaces of the lower left lateral incisor and canine (#*22 &* #*23*) to facilitate correction of the crossbite of the maxillary left lateral incisor (#*10*). One month later, when the crossbite (#*10*) was corrected (*Fig. 13*), the anterior bite turbos were removed, and occlusal bite turbos were bonded on the lower first molar (#*30*) and the lower left second premolar (#*20*). Standard torque brackets were then bonded on all mandibular teeth, except the second molars, and an .014" CuNiTi archwire was placed. At the same appointment, buttons were bonded on the lingual surfaces of the mandibular left 1st molar (#*19*), and both lower second molars (#*18 & 31*). Cross elastics (*Chipmunk 1/8" 3.5oz*) were applied to correct the posterior crossbites bilaterally.

In the 4thmonth of treatment, an OrthoBoneScrew® (*OBS*) (*2x12mm, Newton's A, Taiwan*) was inserted in each mandibular buccal shelf, lateral to the second molars (*Fig. 14*). Power chains were stretched between the miniscrews and the lingual buttons on the mandibular second molars. The occlusal height of the bite turbos on teeth #20 and 30 were increased to avoid contact between the OBSs and the maxillary dentition. The power chains anchored by the OBSs, began to efficiently up-right the lower second molars in three dimensions (*Fig. 15*).

In the 5th month of treatment, an .014x.025" CuNiTi

Fig. 12:
At the start of treatment (0M) an .022" slot Damon Q® bracket system was bonded on the upper arch and a bite turbo was bonded on the lower left lateral incisor and canine. See text for details.

Fig. 13:
One month into treatment (1M), the crossbite of the maxillary left lateral incisor (#10) was corrected, so the bite turbos on #22 and 23 were removed, and new ones were placed on the occlusal surface of #20 and 30. Standard torque brackets were bonded on the mandibular teeth, except second molars, and a .014" CuNiTi archwire was placed. Buttons were bonded on the lingual surfaces of #18, 19 and 31 for the attachment of crossbite elastics.

Fig. 14:
Fours months into treatment (4M), two Orthobonescrews® (2x12mm, Newton's A, Taiwan) were installed bilaterally in the buccal shelves. Power chains were stretched bilaterally between the bone screws and the lingual buttons on the tipped second molars.

archwire was placed on the upper arch and then changed to .017x.025" TMA in the 7th month. A upper anterior ligature from canine to canine was applied to maintain the alignment and prevent space from opening. In all four quadrants, power chains from the canines to hooks on the ipsilateral first molars were activated to retract the anterior segments until the first premolar spaces were closed.

In the 8th month, all the bite turbos and OBSs were removed and brackets were bonded on the lower second molars. An .016" CuNiTi archwire was placed on the lower arch and changed to an .014x.025" CuNiTi archwire in the 9th month (*Fig. 15*). Power chains were applied between the lower canines to avoid any space forming over the lower anterior segment. In the 9th month (*Fig. 15*), bite turbos were placed on the palatal surfaces of the upper central incisors (#*8 & 9*) to maintain the vertical relationship between the upper and lower incisors. At 10 months, the posterior cross elastics were stopped.

In the 11th month, the upper wire was changed to .016x.025" SS, and the following month the lower wire was changed to .017x.025" TMA. In the 12th month, power chains were reactivated to complete space closure in all four quadrants.

In the 15thmonth, an .016x.025" SS archwire was placed on the lower arch. L-type elastics (*Bear 1/4" 4.5oz*) were applied from the upper canines to the lower second molars, bilaterally. The paths of the elastics were positioned gingival to the bracket on the lower first molars (*Fig. 16*).

Fig. 15:
In the 9th month (9M), bite turbos were bonded on the lingual surfaces of the maxillary central incisors to establish the desired vertical relationship as space was closed in all buccal segments. A power chain was applied between the lower canines to prevent space from opening.

Fig. 16:
In the 17th month of treatment (17M), L-shape elastics (Bear ¼" 4.5 oz) were applied bilaterally (two center views), from the upper canines to lower second molar, by passing the elastics gingival to the lower first molar brackets.

In the 17th month, the L-type Class II elastics were continued. Proximal enameloplasty was performed on the four upper incisors. Torque springs were applied bilaterally on the lateral incisors to decrease their labial root torque (*Fig. 16*).

Bracket repositioning was performed repeatedly throughout the treatment as shown in the sequential panoramic films. Wire bending was performed to detail the occlusion during the final stages of the treatment. The panoramic radiograph in Figure 8 shows apparent axial inclination problems between the lower canines and second molars. Since this discrepancy was not apparent clinically (*Figs. 5-6*), these axial inclination "*problems*" were deemed to be artifacts.[1]

After 21 months of active treatment, the appliances were removed and retainers were delivered for both arches.

In the 23rd month, two months after debonding, the labial frenum was removed with a diode laser to help prevent reopening of the contact between the bilateral upper central incisors (*Fig. 17*).

Results Achieved

Maxilla (*all three planes*):

- A - P: *Maintained*
- Vertical: *Maintained*
- Transverse: *Maintained*

■ *Fig. 17:*
From 17-33 months (as marked), the maxillary labial frenum (17M, left) was shown to blanched as the lip was elevated (17M, right). After the diastema was closed, the frenum was removed with a diode laser (23M). Healing was progressing at 25 months (25M), and no scarring was noted at 33 months (33M).

Mandible (*all three planes*):

- A - P: *Maintained*
- Vertical: *Maintained*
- Transverse: *Maintained*

Maxillary Dentition

- A - P: *Retraction of incisors and protraction of the buccal segments*
- Vertical: *Maintained*
- Inter-molar/Inter-canine Width: *Crowding corrected with first premolar extraction*

Mandibular Dentition

- A - P: *Retraction of incisors and protraction of the buccal segments*
- Vertical: *Maintained*
- Inter-molar / Inter-canine Width: *Crowding corrected with first premolar extraction*

Facial Esthetics: Lower lip retracted

Retention

Clear overlays were delivered for both arches. The patient was instructed to wear them full time for the first 6 months and nights only thereafter. Instructions were provided for the home hygiene and maintenance of the retainers.

Final Evaluation of the Treatment

The patient was pleased with the result, particularly with regard to masticatory function and facial harmony (*Fig. 4*). Post-treatment intraoral photographs and study casts (*Figs. 5-6*) show a Class I molar and canine on the right side, with Class II canine and Class I molar relationships on the left side. The dental and facial midlines were coincident. Cephalometric measurements are presented in Table 1. Superimpositions of tracings (*Fig. 9*) demonstrate the retraction of the incisors and protraction of the buccal segments to close the first premolar extraction spaces. The lower lip was retracted to relieve the lip protrusion and produce the lip balance that the patient expected. The upper incisor to SN angle was decreased from 115 to 112°, and the lower incisor to the mandibular plane angle was reduced from 106 to 95°.

The ABO Cast-Radiograph Evaluation (*CRE*) score was 24 points. The major discrepancies were occlusal relationships (*7 points*), marginal ridges (*6 points*), axial inclination of the lower canines relative to second premolars (*2 points*), overjet (*5 points*), and arch alignment (*4 points*). The CRE could be corrected from 24 to 22, because the two points deducted for lower canine axial inclinations are probably an artifact.[1] Those alignment problems are not evident on the finish records (*Figs. 5 and 6*). Distortion of axial inclinations in the cuspid area of both arches is a common artifact on panoramic radiographs. Overall, the excellent dental alignment (*CRE 22*), midlines (*Fig. 5*), and facial profile (*Fig. 18*) were pleasant outcomes for both the patient and clinician.

Discussion

The etiology of scissor bite is usually the ectopic eruption of the maxillary molars to the buccal

Fig. 18:
1 year after treatment a full set of records was obtained. Note the excellent facial esthetics and stability following correction of this severe crowded malocclusion (DI 29) in a skeletally mature female.

of their lower molar antagonists. The problem is most common in the second molar region and is frequently bilateral. First molars are the second most common site, and occasionally the whole buccal segment is involved.[2]

Treatment of scissors bite may involve intermaxillary cross-elastics, full fixed appliance, bite turbos, transpalatal arch and/or lower lingual arch. All of these mechanics may induce undesirable side-effects: 1. extrusion of second molars in one or both jaws, 2. undesirable decrease in overbite or even a frank openbite, 3. clockwise rotation of the mandible, and 4. premature occlusal contacts (*Fig. 19*).

Furthermore, when molars are extruded, marginal ridge discrepancies are probable. If intermaxillary elastics are used, patient cooperation is a critical factor because crossbite correction may result in periods of uncomfortable occlusal contact.

Treating scissor bites with miniscrews is increasingly popular because it is less invasive than surgery and does not require as much cooperation as intermaxillary elastics.[3,4,5] Park, Yun et al.[6] corrected

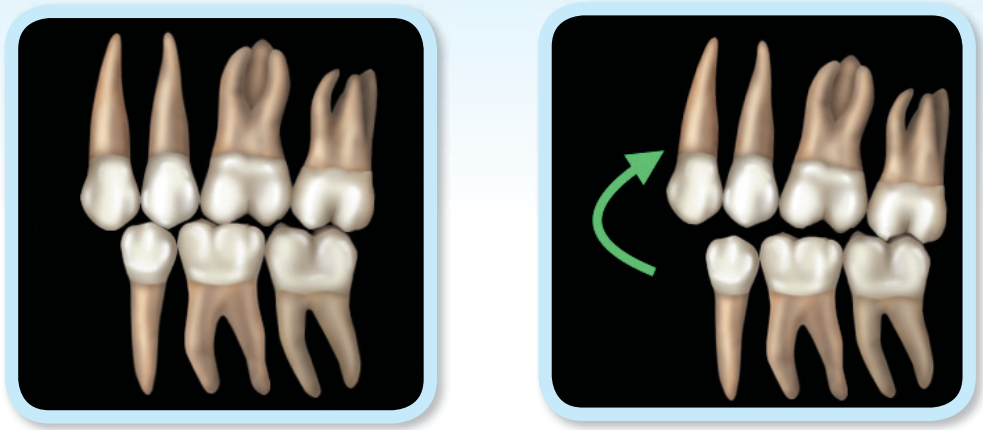


Fig. 19:
Two drawings demonstrate a common complication of posterior scissors bite correction when the extrusion of molars is not controlled by bone screws. A normal Class I occlusion (left) can develop an anterior openbite (right) when the buccal crossbite correction is attempted with conventional mechanics. The scenario is as follows: 1. extrusive forces on the second molars in both jaws, 2. undesirable decrease in anterior overbite, 3. clockwise rotation of the mandible, and 4. premature contact of second molars (right), and 5. an anterior openbite with lip incompetence.

scissors bite by intruding the upper and lower second molars with buccal and lingual traction, anchored with miniscrews. Rotation of molars may be a problem if there is a sagittal component to the intrusive forces.

In addition to temporary anchorage devices (*TADs*), efficient management of scissors bite requires bite turbos to avoid occlusal interferences and prevent undesirable rotations. Opening the bite facilitates the control of applied moments and forces. OBSs are more efficient for molar intrusion than interradicular miniscrews because they are not placed between the roots of teeth. OBSs and bite turbos provide optimal TAD mechanics for correction of scissors bite with minimal complications (*Figs. 14-16*).

The present patient was treated by extracting all four first premolars. A nonextraction option was considered which would have involved en masse retraction of the buccal segments in both arches to reduce lip protrusion.[7-11] However, the severe lingual tipping of the molars imposed anatomic limitations for placing TADs at the start of treatment. The desired positions for OBS anchorage to retract both arches would probably have impinged on the roots of the lower molars. Another option was to reposition the OBSs after the scissors bite was corrected, and then retract both arches, but that approach would result in an excessively long treatment time.

Management of the maxillary midline diastema (*black triangle*) was a priority for the patient, so a careful diagnosis and treatment plan was indicated. Biopsy specimens demonstrate that a frenum may contain collagen tissue, elastic fibers, and striated (*skeletal*) muscle fibers.[12] According to the site

of the attachment, Mirko et al.[13] suggested four classifications for frenum tissue: mucosal, gingival, papillary, or papillary penetrating. In the present patient, the gingiva blanched, between the upper central incisors, when the upper lip was retracted (*Fig. 17*). This type frenum is classified as papillary penetrating, which presents a risk for the diastema reopening after it is closed orthodontically. A frenectomy is best performed after closing the diastema because surgical removal of the frenum before orthodontics may result in scar tissue that obstructs space closure.[14]

There are several options for the labial frenectomy procedure: V-shaped incision,[15] Z-plasty incision,[15] or diode lasers (*Nd:YAG, Er:YAG, or CO2*).[16,17] Patients experience markedly less bleeding with laser oblation, compared surgery by lasers, and there is no need for sutures or periodontal dressings.[16] Compared to surgery with a scalpel, laser frenectomy involves less discomfort, minimal swelling,[18] and fewer functional complications.[19,20] Furthermore, less analgesics are required postoperatively.[20] Carefully considering all the options, the labial frenum was removed by laser oblation after the maxillary diastema was closed (*Fig. 17*).

Follow-up evaluation one year later, revealed that the overall result was stable and the diastema had remained closed (*Fig. 18*). Figure 19 demonstrates some of the complications associated with conventional orthodontics correction, without OBSs. The patient was very pleased with the relatively short treatment time (*21 mo*) and excellent result associated with the current innovative approach: extractions, bite turbos and E-A OBSs.

Conclusion

Using extra-alveolar bone screws and bite turbos provided optimal mechanics for correcting a bilateral scissors bite. This innovative method was consistent with an overall excellent resolution of a challenging, asymmetric malocclusion. Premolar extractions and space closure were an efficient solution for resolving the bimaxillary protrusion in a timely manner. Bimaxillary retraction with bone screws to correct bimaxillary protrusion would have increased treatment time for the present patient, because they could not be placed in an optimal location initially.

Acknowledgment

Thanks to Mr. Paul Head for proofreading this article.

References

1. Owens AM, Johal A. Near-end of treatment panoramic radiograph in the assessment of mesiodistal root angulation. Angle Orthod 2008;78(3):475-481.
2. Nagato T. Use of palatal miniscrew anchorage and lingual multi-bracket appliances to enhance efficiency of molar scissors-bite correction. Angle Orthod 2008; Vol.79, No.3:577-584.
3. Kuroda S et al. Clinical use of miniscrew implants and orthodontic anchorage: success rates and postoperative discomfort. Am J Orthod Dentofacial Orthop 2007;131:9-15.
4. Jung MH, Kim TW. Biomechanical considerations in treatment with miniscrew anchorage. Part 1 The sagittal plane. J Clin Orthod 2008 Feb;42(2): 79-83.
5. Nakamura A, Teratani T, Itoh H, Sugawara J, Ishikawa H. Photoelastic stress analysis of mandibular molars moved distally with the skeletal anchorage system. Am J Orthod Dentofacial Orthop 2007;132:624-9.
6. Park HS et al. Uprighting second molars with micro-implant anchorage. J Clin Orthod 2004;38:100-103.
7. Lin JJ. Creative Orthodontics: blending the Damon system & TADs to manage difficult malocclusions. 2nd ed. Taipei: Yong-Chieh; 2010. P. 209-226.
8. Chang CH, Roberts WE. Stability of mini-screws on buccal shelves: a retrospective study of 1680 mini-screw insertions by the same orthodontist. Int J Orthod Implantol 2013;30:76-78.
9. Chang CH, Roberts WE. A retrospective study of the extra-alveolar screw placement on buccal shelves. Int J Orthod Implantol 2013;32:80-89.
10. Chang CH, Liu SS, Roberts WE. Primary failure rate for 1680 extra-alveolar mandibular buccal shelf miniscrews placed in movable mucosa or attached gingiva. Angle Orthod 2015 (Accepted Jan 20, 2015 In Press).
11. Kuroda S, Yamada K, Deguchi T, Kyung HM, Yamamoto TT. Class II malocclusion treated with miniscrew anchorage: comparison with traditional orthodontic mechanics outcomes. Am J Orthod & Dentofacial Orthop 2009 Mar;135(3):302-309.
12. Ross RO, Brown FM, Houston GD. Histological survey of the frena of the oral cavity. Quintessence Int 1990;21:233-237.
13. Mirko P, Miroslav S, Lubor M. Significance of the labial frenum attachment in periodontal disease in man. Part I. Classification and epidemiology of the labial frenum attachment. J Periodontol 1974;45:891-894.
14. Edwards J. The diastema, the frenum and the frenectomy: A clinical study. Am J Orthod 1977;71(5):489-508.
15. Kahnberg KE. Frenum surgery. A comparison of three surgical methods. Int J Oral Surg 1977;6:328-333.
16. Epstein SR. The frenectomy: a comparison of classic versus laser technique. Pract Periodontics Aesthet Dent 1991;3:27-30.
17. Bornstein MM, Suter VG, Stauffer E, Buser D. The CO2 laser in stomatology. Part 1 [In German]. Schweiz Monatsschr Zahnmed 2003;113:559-570.
18. Desiate A, Cantore S, Tullo D, Profeta G, Grassi FR, Ballini A. 980 nm diode lasers in oral and facial practice: current state of the science and art. Int J Med Sci 2009;6:358-364.
19. Haytac MC, Ozcelik O. Evaluation of patient perceptions after frenectomy operations: A comparison of carbon dioxide laser and scalpel techniques. J Periodontol 2006;77:1815-1819.
20. Kara C. Evaluation of patient perceptions of frenectomy: A comparison of Nd:YAG laser and conventional techniques. Photomed Laser Surg 2008;26:147-152.

Discrepancy Index Worksheet

TOTAL D.I. SCORE 27

OVERJET

0 mm. (edge-to-edge)	=	
1 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
7.1 – 9 mm.	=	4 pts.
> 9 mm.	=	5 pts.

Negative OJ (x-bite) 1 pt. per mm. per tooth =

Total = 4

OVERBITE

0 – 3 mm.	=	0 pts.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	3 pts.
Impinging (100%)	=	5 pts.

Total = 7

ANTERIOR OPEN BITE

0 mm. (edge-to-edge), 1 pt. per tooth
then 1 pt. per additional full mm. per tooth

Total = 1

LATERAL OPEN BITE

2 pts. per mm. per tooth

Total = 0

CROWDING (only one arch)

1 – 3 mm.	=	1 pt.
3.1 – 5 mm.	=	2 pts.
5.1 – 7 mm.	=	4 pts.
> 7 mm.	=	7 pts.

Total = 1

OCCLUSION

Class I to end on	=	0 pts.
End on Class II or III	=	2 pts. per side _____ pts.
Full Class II or III	=	4 pts. per side _____ pts.
Beyond Class II or III	=	1 pt. per mm. additional _____ pts.

Total = 0

LINGUAL POSTERIOR X-BITE

1 pt. per tooth Total = 0

BUCCAL POSTERIOR X-BITE

2 pts. per tooth Total = 6

CEPHALOMETRICS (See Instructions)

ANB ≥ 6° or ≤ -2° = 4 pts.

Each degree < -2° _____ x 1 pt. = _____

Each degree > 6° _____ x 1 pt. = _____

SN-MP

≥ 38° = 2 pts.

Each degree > 38° _____ x 2 pts. = _____

≤ 26° = 1 pt.

Each degree < 26° _____ x 1 pt. = _____

1 to MP ≥ 99° = 1 pt.

Each degree > 99° 7 x 1 pt. = 7

Total = 8

OTHER (See Instructions)

Supernumerary teeth	_____ x 1 pt. =	_____
Ankylosis of perm. teeth	_____ x 2 pts. =	_____
Anomalous morphology	_____ x 2 pts. =	_____
Impaction (except 3rd molars)	_____ x 2 pts. =	_____
Midline discrepancy (≥3mm)	@ 2 pts. =	_____
Missing teeth (except 3rd molars)	_____ x 1 pts. =	_____
Missing teeth, congenital	_____ x 2 pts. =	_____
Spacing (4 or more, per arch)	_____ x 2 pts. =	_____
Spacing (Mx cent. diastema ≥ 2mm)	@ 2 pts. =	_____
Tooth transposition	_____ x 2 pts. =	_____
Skeletal asymmetry (nonsurgical tx)	@ 3 pts. =	_____
Addl. treatment complexities	_____ x 2 pts. =	_____

Identify:

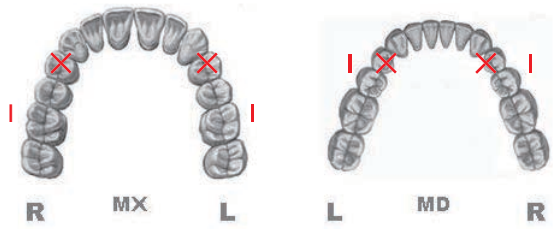
Total = 0

Cast-Radiograph Evaluation

Total CRE Score 24

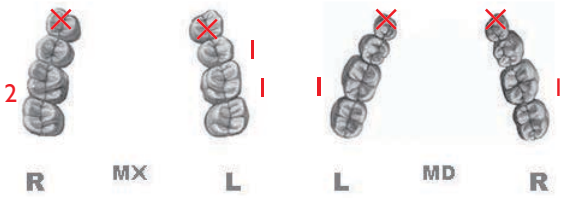
Alignment/Rotations

4



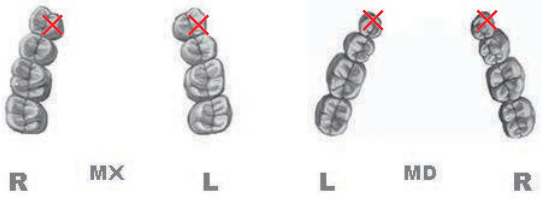
Marginal Ridges

6



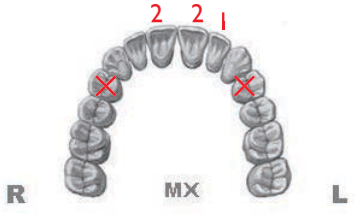
Buccolingual Inclination

0



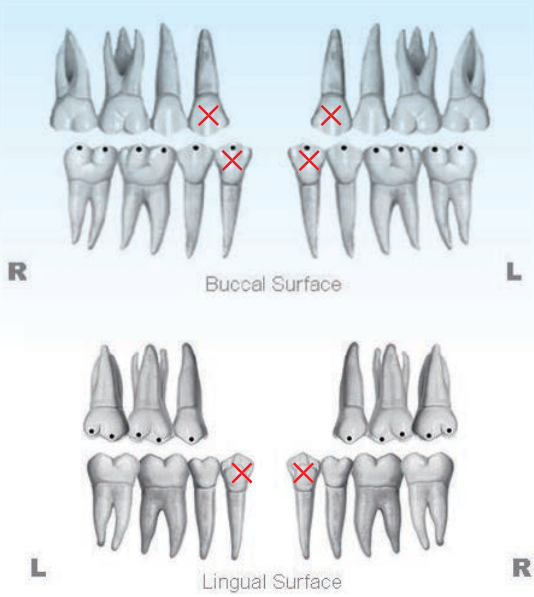
Overjet

5



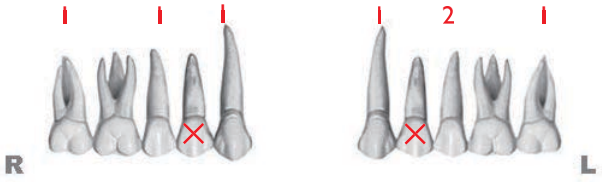
Occlusal Contacts

0



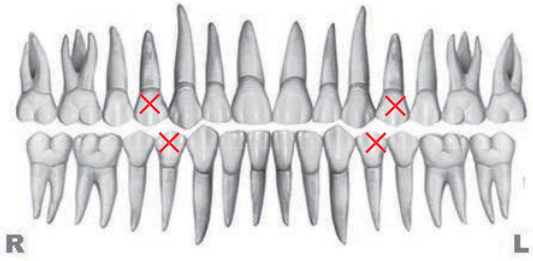
Occlusal Relationships

7



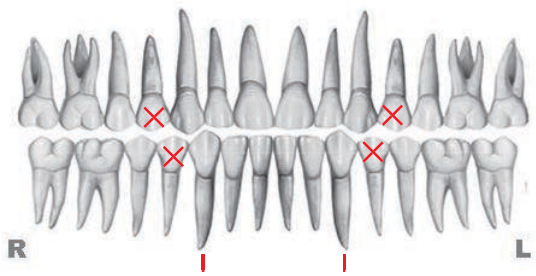
Interproximal Contacts

0



Root Angulation

2



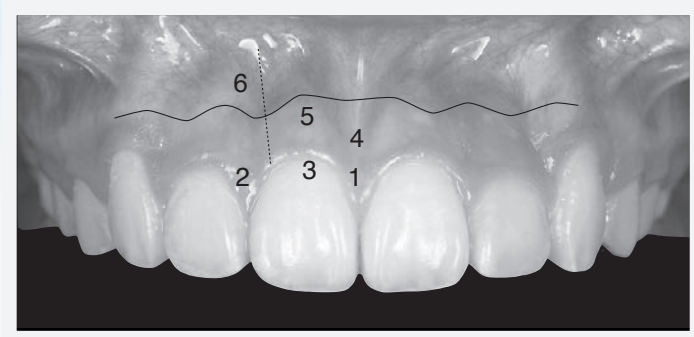
INSTRUCTIONS: Place score beside each deficient tooth and enter total score for each parameter in the white box. Mark extracted teeth with "X". Second molars should be in occlusion.

IBOI Pink & White Esthetic Score (Before Surgical Crown Lengthening)

Total Score: = 4

1. Pink Esthetic Score

Total = 2

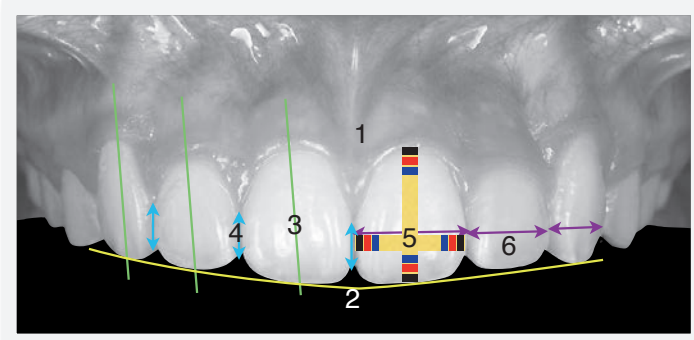


1. M-D Papilla	0	1	2
2. Keratinized Gingiva	0	1	2
3. Curvature of Gingival Margin	0	1	2
4. Level of Gingival Margin	0	1	2
5. Root Convexity (Torque)	0	1	2
6. Scar Formation	0	1	2

1. M & D Papillae	(0)	1	2
2. Keratinized Gingiva	(0)	1	2
3. Curvature of Gingival Margin	(0)	1	2
4. Level of Gingival Margin	0	(1)	2
5. Root Convexity (Torque)	(0)	1	2
6. Scar Formation	0	(1)	2

2. White Esthetic Score (for Micro-esthetics)

Total = 2



1. Midline	0	1	2
2. Incisor Curve	0	1	2
3. Axial Inclination (5°, 8°, 10°)	0	1	2
4. Contact Area (50%, 40%, 30%)	0	1	2
5. Tooth Proportion (1:0.8)	0	1	2
6. Tooth to Tooth Proportion	0	1	2

1. Midline	(0)	1	2
2. Incisor Curve	0	(1)	2
3. Axial Inclination (5°, 8°, 10°)	0	(1)	2
4. Contact Area (50%, 40%, 30%)	(0)	1	2
5. Tooth Proportion (1:0.8)	(0)	1	2
6. Tooth to Tooth Proportion	(0)	1	2

Herman Ostrow School of Dentistry of USC

Continuing Professional Education

USC University of Southern California

南加大植牙專科進修課程 2015

時間：7/19~20, 2015 (日，一 - 演講與實作 workshop)
9/20~21, 2015 (日，一 - 演講與實作 workshop)
11/22~23, 2015 (日，一 - 演講與實作 workshop)
1/25, 2016 (一 - 美國演講)
1/27, 2016 (三 - 美國可選修的 cadaver workshop)
1/29~30, 2016 (五，六 - 美國演講，畢業典禮)
8/30, 2015 (日 - 視訊教學)
10/18, 2015 (日 - 視訊教學)
12/13, 2015 (日 - 視訊教學)
1/26, 2016 (二 - 美國演講)
1/28, 2016 (四 - 美國可選修的 cadaver workshop)
1/31, 2016 (日 - 美國可選修的 cadaver workshop)

地點：集思交通部國際會議中心　台北市中正區杭州南路一段 24 號 (2015 年 7 月到 12 月)
USC Campus and Millennium Biltmore Hotel Los Angeles. 506 South Grand Avenue. Los Angeles, CA 90071-2607

南加大講員陣容

Homa Zadeh

南加大牙醫學院畢業牙周病專科醫師及副教授終身職，康乃迪克大學牙周病專科醫師訓練，免疫博士。

Avishai Sadan

南加大牙醫學院院長，LSU牙醫學院補綴專科，Quintessence of Dental Technology (QDT) 前主編。

Baldwin Marchack

畢業於南加大牙醫學院，並且於UCLA獲得MBA學位。美國贋復協會前任主席。

Casey Chen

南加大牙醫學院牙周病專科主任，台大牙醫學士，羅馬林達大學牙醫學位，匹茲堡大學牙周病專科訓練。

Alireza Moshaverinia

南加大牙顱面生物學博士，伊利諾伊大學牙科學院生物材料具碩士。

Ilan Rotstein

南加大牙醫學院牙髓科教授，手術，治療，和生物科學專科主任，也是本繼續教育中心的負責人。

Yang Chai

南加大牙醫學院顱面分子生物研究學院副院長，南加大顱面分子生物博士，北京大學牙科學士及口腔顎面外科培訓。

Parish Sedghizadeh

南加大牙醫學院臨床牙科，牙周病科，診斷學和牙齒衛生終身副教授，美國口腔委員會口腔顎面委員。

Ramin Mahallati

南加大牙醫學院臨床講師，畢業於南加大牙醫學院，口腔修復專業培訓。

演講嘉賓：Niklaus P. Lang、Fernando Rojas-Vizcaya、Stephen Wallace、Lyndon Cooper

USC	金牛頓藝術科技
聯絡人：Julie E-mail：julie.chen@usc.edu 電話：+1-213-821-5281	聯絡人：朱央如 E-mail：bellabala@newtonsa.com.tw 電話：(03) 573-5676

困難 Class III 治療的 饗宴

2015 8/02 T.A.I.P.E.I

Dr. Rungsi Thavarungkul

Non-Surgical
Class III Tx Improvisation

Mix Arts in Orthodontic Tx of Class III
with PSL that Everyone Can Do

參加課程附贈圖文並茂講義

講師介紹 SPEAKER

Dr. Rungsi Thavarungkul

1986: D.D.S. Mahidol University
1990: M.S. (Orthodontics)Chulalongkorn University
Now: Private practice

演講資訊 INFORMATION

主辦單位： 中華民國齒顎矯正學會

協辦單位： 湧傑企業股份有限公司

講　　師： Dr. Rungsi Thavarungkul

時　　間： 2015/8/2(Sun.)09:00-17:00

地　　點： 台灣金融研訓院菁業堂

台北市羅斯福路3段62號2-3F

費　　用： 2015/7/10 前 會員***3,000***元，非會員***4,000***元，本會學生***1,500***元

2015/7/11 後 會員***4,000***元，非會員***5,000***元，本會學生***2,000***元

＊台灣口腔矯正學會會員比照本會會員收費

報名方式： 劃撥戶名：社團法人中華民國齒顎矯正學會

劃撥帳號：14969234

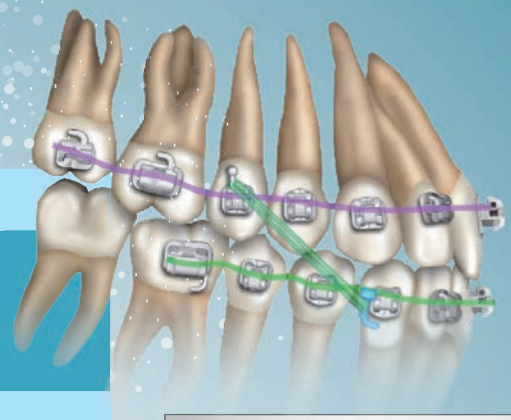
線上刷卡：http://www.tao.org.tw/on-line-pay.jsp

學　　分： 本會授予專科醫師認證7.2學分；非專科醫師依「醫事人員執業登記及繼續教育辦法」登錄7.2學分；公務人員登錄「公務人員終身學習」時數6小時

備　　註： 活動備茶點及午餐，素食請先告知

報名未出席者恕不退還既收款項

AGENDA 課程表



TIME	TOPIC
09:00 - 10:45	The art of orthodontic application in Class III treatment • Imagination and knowledge in Class III treatment • Aesthetic smile design for Class III patients • Light force and mechanics for Class III treatment
10:45 - 11:15	**Coffee Break**
11:15 - 12:30	How to enjoy treating Class III deep-bite? • Bite turbo application in Class III deep bite cases • Force and mechanics for Class III deep bite cases • Light Force and mechanics for Class III treatment
12:30 - 13:30	**Lunch Break**
13:30 - 14:45	Have Fun with treating Class III Open-bite • "More bite opening"? keys to successful Class III open-bite treatment • Force and mechanics for the Class III deep bite • Light force and mechanics for Class III treatments
14:45 - 15:15	**Coffee Break**
15:15 - 16:30	Class III and TADs, Secrets that I've stolen from Class III gurus • The art and science of Class III Treatment with TADs • Light force, TADs and Class III cases
16:30 - 17:00	Pannel Discussion

Speaker would like to discuss all of these topics to his own cases and some clear cut diagrams that will guide the audiences to the better understanding of his idea.

強力推薦 RECOMMEND

林錦榮
中華民國齒顎矯正學會 顧問
台灣口腔矯正醫學會 顧問
林錦榮齒列矯正中心 主治醫師

一場不聽會後悔之精彩演講

這是一場聽後即可學到很多可馬上臨床應用之好方法。

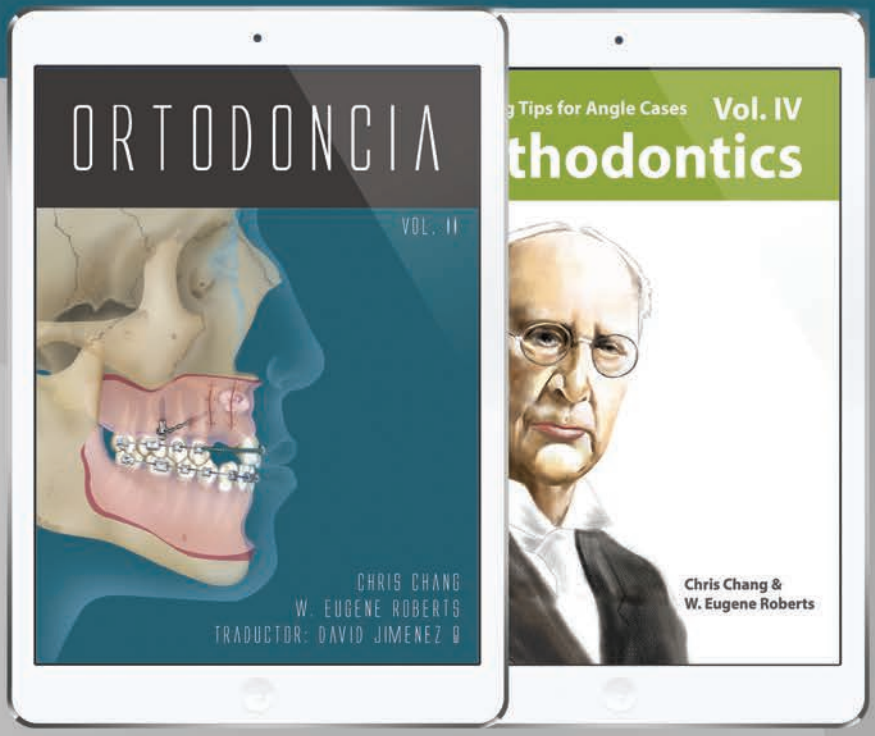
Dr. Rungsi 自從使用 PSL (Passive Self Ligating) 自鎖矯正器以來，不辭勞苦地於國際間拜訪名師，經由 Dr. Tom Pitts 而注重 Smile Arc， 由張慧男醫師及筆者間學到 TADs 於 Class III 之應用。利用他及 Dr. Q 於 mechanics 之深厚底子，及精準之繪圖能力，解碼了 Dr. Etsuko Kondo 之複雜但有奇效之治療方法，最近更多次邀請陳彥朋醫師講學而逐漸將彥朋獨特善用 LH wire 之超有效療法應用於 Class III。 治療 Class III 最怕造成上門齒過份唇傾 (labial proclination)、下門齒過度舌傾 (lingual tilting)，過度平而不美觀之 Smile Arc，深咬或開咬之控制，擁擠齒列於不拔牙情況下之處理，這些細節此演講中將會介紹詳細有效之處理方法，剛開始會覺得要彎很多矯正線有些麻煩，但只要熟悉後，就是一些常用之彎法，臨床上卻非常好用，以後可隨時參考講義內容應用之，困難 Class III 將可迎刃而解。

兩年前 Dr. Rungsi 及 Dr. Q 於台北之第一場演講即造成相當轟動，有鑒多治療細節希望能更進一步釐清，此次演講可以清楚地再由 Dr. Rungsi 之眾多精彩困難 Class III 症例及詳細分析中選取最佳治療方法。

Dr. Rungsi 曾幫張慧男醫師及筆者於雜誌及書上畫世界上最美也最真實之矯正治療圖解，使我們之資料更精彩，慧男當年將筆者由泰國引進 Dr. Rungsi 之 Keynote 檔案分析發揚光大，目前已成為世界各國爭相邀請之矯正大師。此次演講可賞心悅目欣賞 Dr. Rungsi 流暢之圖解、卡通、一流之 Keynote 演講，其漂亮又完整之臨床記錄，及筆者所看過擁有最多困難 Class III 病例之完整分享，Dr. Rungsi 且在筆者之邀請下，將作一份圖文並茂之講義，使課後大家複習應用時有所參考。

Dr. Rungsi 非常樂於與人分享，為準備此次演講，他已先將所有演講內容給彥朋及筆者，客氣地要我們找出最適合國內矯正界之內容，經過日以繼夜之討論及研究後，請他集中火力講一天 Class III， 這麼棒的內容是筆者聽過最好的 Class III 治療的演講，誠摯地邀請您一定不要錯過。

Beethoven Dental Encyclopedia e-Book



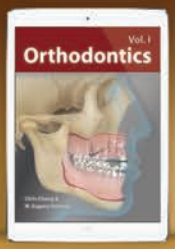
Beethoven Dental Group regularly publishes world-class journal, *International Journal of Orthodontics and Implantology* (IJOI). Over the years many excellently finished cases are published. By popular demands a special selection of these cases, Orthodontics, is now available in iBooks edition. Once opening this book, your understanding of orthodontics will never be the same!

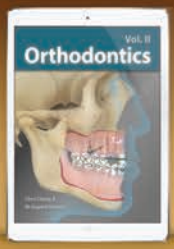
ORTODONCIA VOL. II

available on the iBookstore NEW

eBooks List

Orthodontics Vol.I Orthodontics Vol.II



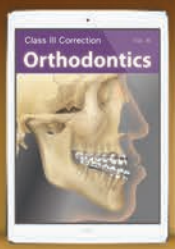


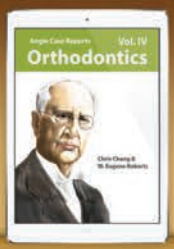
Orthodontics Vol. I-III, and Implant Dentistry Vol. I-II

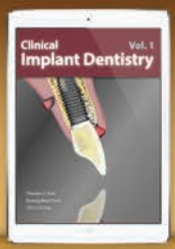
are now available on **iBooks Store** in total **51 countries**:

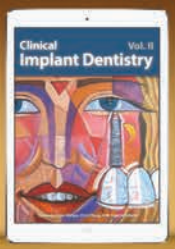
Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Bulgaria, Canada, Chile, Colombia, Costa Rica, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, El Salvador, Estonia, Finland, France, Germany, Greece, Guatemala, Honduras, Hungary, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, Mexico, Netherlands, New Zealand, Nicaragua, Norway, Panama, Paraguay, Peru, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States, and Venezuela.

Orthodontics Vol.III Orthodontics Vol.IV Implant Dentistry Vol.I Implant Dentistry Vol.II









Available on the iBookstore

Orthodontics in Spanish & Chinese

http://www.orthobonescrew.com
E-mail: app@newtonsa.com.tw

TEL：+886-3-5735676 Newton's A

最新版 Keynote Workshop
高效簡報學習法 系列課程

New!

輕鬆製作簡報

K1 簡報聖經 ~~2015.07.09~~ 2016.07.14
學習重點：1. 操作入門　2. 演講常見十大謬誤　3. 資料視覺化技巧

K2 Dr. Kokich 令人屏息的十大演講秘訣 2015.08.06 2016.08.04
學習重點：1. Dr. Kokich 十大演講秘訣　2. 準備演講九步驟　3. 多媒體剪輯

K3 賈伯斯令人目眩神迷的五項演講技巧 2015.09.03 2016.09.15
學習重點：1. 賈伯斯五項演講技巧　2. 幻燈片設計概念　3. 幻燈片修改應用

Keynote 高效學習寶典 49折！

本寶典包含：
(1) K1~K3
(2) K4~K6
(3) 2014, 2015 課程視訊

備註：
(1) 課程當日之前結清款項才能享有本優惠。
(2) 舊生報名K1~K3須繳訂金，課程日退還。
(3) 若取消報名，適用下述K4~6退款說明。

繪圖簡報達人

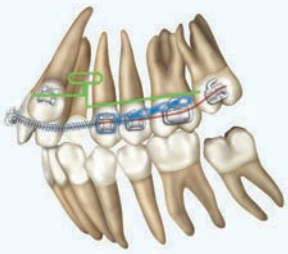
K4 K5 K6 精修繪圖及動畫技巧 ~~2016.07.07~~ 2016.10.22-24

- 世界第一堂最完整的最新版 Keynote 6 課程。
- 在 Keynote 內繪製插圖，並運用動畫效果完美呈現。
- 利用 Keynote 創造複雜的構件。
- 完美整合 Keynote 實用技巧及牙科診間運用。

講師
Dr. Rungsi Thavarungkul

報名 2016 K456 課程即 贈送 2015 及 2016 課程視訊。

備註：
1. 限額 25 名，以繳費順序為依據。
2. 舊生享重溫特惠價，限額 6 名。
3. 若取消報名，09/05 前退款將扣除10% 行政手續費，09/06 後扣除30%行政手續費。



報名專線：03-5735676
上課地點：金牛頓藝術科技
新竹市建中一路25號2樓

匯款帳號：
- 銀行代碼：815 日盛銀行 光復分行
- 匯款帳號：109-25203060-000
- 戶名：金牛頓藝術科技股份有限公司

Newton's A
金牛頓藝術科技

Simplified Open-window Technique for a Horizontally Impacted Maxillary Canine with a Dilacerated Root

Introduction

A left maxillary canine with a dilacerated root is horizontally impacted in the palate. Extraction is undesirable, so the preferred option is efficient surgical exposure and orthodontic alignment.[1] For palatal impactions, the open window technique is a common surgical approach.[2,3] There are multiple surgical and orthodontic options to customize the process for a specific patient.[4-6] This article illustrates the step-by-step surgical procedures as a checklist to assist clinicians in efficiently recovering palatally-impacted maxillary canines.

Case Study

A 12 year 8 month old boy presented for assessment of an unerupted maxillary canine. A panoramic radiograph (*Fig. 1*) showed an impacted upper left canine associated with a retained deciduous canine on the same side. Intraoral occlusal photographs (*Figs. 2 and 3*) show modest alignment problems as well as caries in the retained maxillary canine. Three-dimensional (*3D*) renderings of a cone-beam computed tomography (*CBCT*) scan[7] showed that the crown of the impacted canine was oriented distally, near the apices of the

Fig. 1: Pre-treatment panoramic radiograph shows the horizontal impaction of the left maxillary canine (#11).

Dr. Ariel Chang,
Instructor, Beethoven Orthodontic Course (Left)

Dr. Chris Chang,
Founder, Beethoven Orthodontic Center
Publisher, International Journal of Orthodontics& Implantology (middle)

W. Eugene Roberts,
Consultant, International Journal of Orthodontics & Implantology (right)

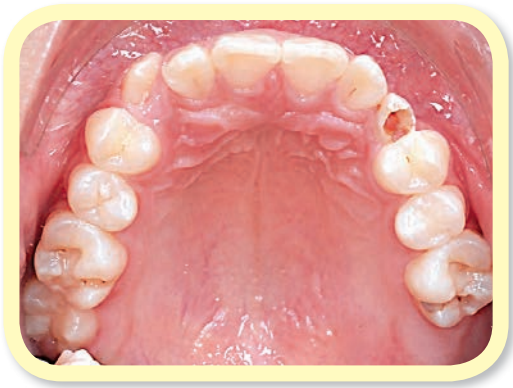


Fig. 2:
Intraoral occlusal view of the maxillary arch shows no evidence of an impacted tooth.

adjacent premolars (*Figs. 4 and 5*). CBCT slices along the long axis of the tooth, and perpendicular to it, revealed the impaction was completely covered with bone (*Figs. 6 and 7*). A periapical film demonstrated root dilaceration of the impacted canine, and incomplete apical development (*Fig. 8*). Radiographic documentation (*Figs. 1 and 4-8*) provides the precise location of the impacted tooth prior to surgery to uncovering it.[7] The specialized procedures for surgically exposing this challenging impaction are presented in a checklist.

Fig. 3:
Intraoral photograph of the occlusal view of the mandibular arch.

Fig. 4:
A 3D rendering of the maxillary dentition shows the impacted canine is positioned lingual to the premolar roots.

Fig. 5:
A 3D rendering of a CBCT scan shows the maxillary dentition from a posterior palatal perspective.

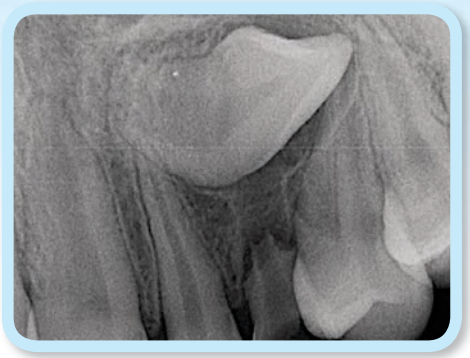


Fig. 8:
A periapical film demonstrates a dilaceration in the root of the impacted cuspid.

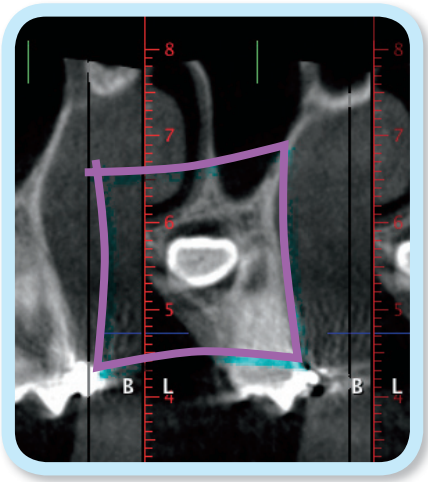


Fig. 6:
A CBCT slice perpendicular to the long axis of the impacted canine (colored boxes) shows it is located beneath the palatal cortical plate.

Fig. 9:
The orientation of the impaction and roots of adjacent teeth are visualized on a CBCT image.

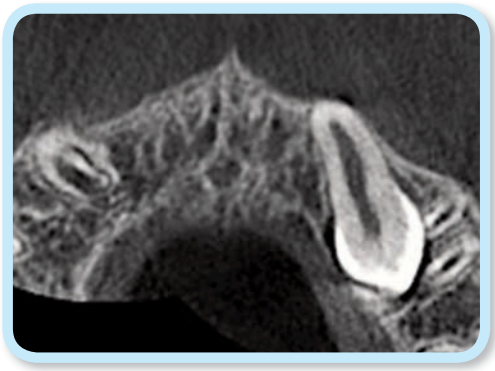


Fig. 7:
An axial slice along the long axis of the impaction shows it is located near the roots of the premolars.

Surgery Procedures

1. Orientation

- *Locate the position of the impacted canine.*

  » Plane radiographs (*occlusal and periapical films*) may be adequate for localizing and determining the root shape of relatively simple soft tissue impactions, but bony impactions require CBCT imaging for precise localization relative to adjacent teeth (*Fig. 9*).[7] Slices from the CBCT

imaging are also useful for determining the thickness and density of the bone covering the tooth (*Fig. 6*). In addition, 3D imaging reveals the root shape (*Fig. 7*), and any anomalies present that may limit the prognosis for the impaction, even if it is aligned. This is an important aspect of differential diagnosis. It is a waste of time and money to recover an unserviceable tooth.

2. Indentation

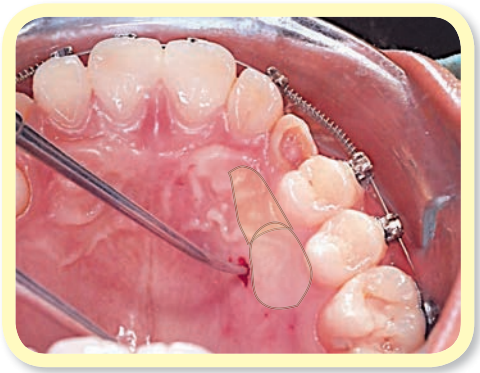


Fig. 10:
Mark the location of the underlying crown with a sharp explorer. See text for details.

- *Apply local anesthesia to the surgical site.*
- *Mark the location of the crown with a sharp explorer.*[4,5]

» The sensation is different when an explorer strikes a tooth rather than bone. Enamel is very rigid and there is no penetration by even a sharp stainless steel (SS) explorer. A tooth root is not as hard as the enamel, but penetration by the explorer tip is quite limited. The explorer will penetrate bone with a crunchy sensation.

3. Flap Reflection

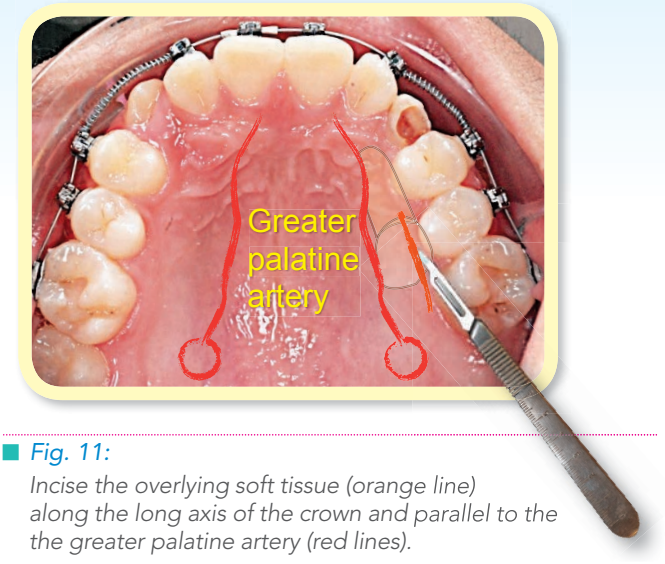


Fig. 11:
Incise the overlying soft tissue (orange line) along the long axis of the crown and parallel to the the greater palatine artery (red lines).

- *Incise the soft tissue along the long axis of the crown with a No. 15c surgical scalpel (Fig. 11).*[2]
- *Reflect the flap with a surgical curette or periosteal elevator.*
- *Beware of the greater palatine artery (Fig. 11) which courses through the center of each half of the palate. If possible make incisions parallel to the artery and avoid deep transverse sections that may sever it.*

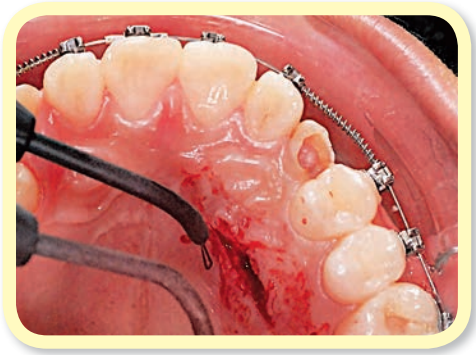


Fig. 12:
The soft tissue covering the crown of the impacted canine is removed with electrosurgery.

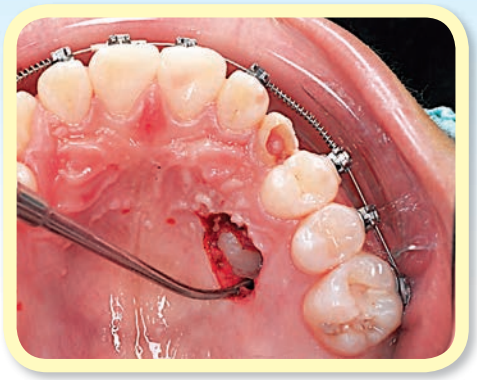


Fig. 13:
Remove soft tissue to expose the bone covering the crown of the cuspid, and locate the underlying enamel with an explorer.

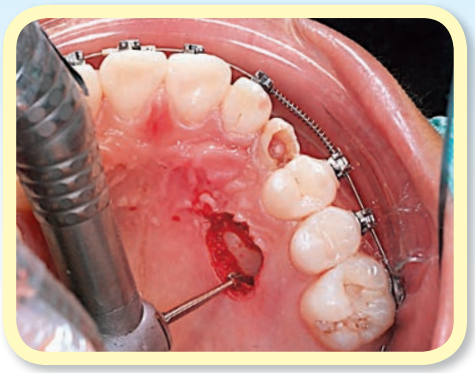


Fig. 14:
All bone covering the crown of the impaction is carefully removed down to the level of the CEJ. Avoid directly contacting the tooth with the bur.

- *Use a dental electrosurgical unit (ESU) to remove the soft tissue covering the crown (Fig. 12).*[3]

  » ESU controls localized bleeding by cauterizing vessels and coagulating blood. This method prevents blood oozing from the wound, thereby providing good visualization of the surgical field.

- *Use an explorer to penetrate overlying bone to determine the position of the cuspid crown (Fig. 13).*

  » Differential sensations when an explorer engages enamel, the root of the tooth or bone is a very effective method for surgically locating the crown of the impaction.

4. Bone Removal

- *Use a high speed handpiece with a carbide round bur to remove the overlying bone (Fig. 14).*[2,3]

  » It is essential to remove all bone covering the crown down to the cementoenamel junction (*CEJ*). Spontaneous tooth eruption is facilitated by removing bone apical to the height of curvature of the crown. Be cautious with the bur near the CEJ to avoid injuring the tooth. When the layer of overlying bone is thinned sufficiently, the remnant is easily removed with a hand instrument. Cervical damage to the tooth can subsequently result in external root resorption.[8]

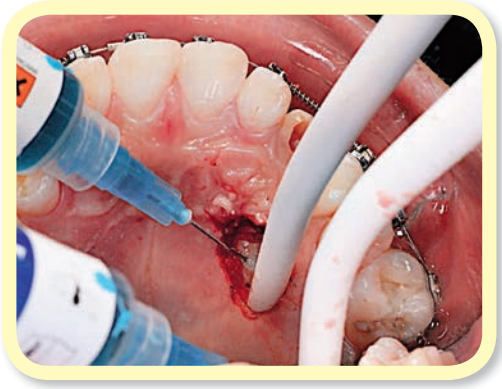


Fig. 15:
The etching solution is applied to the enamel surface with a syringe (upper left). Moisture is controlled with surgical suction (grey tube).

5. Etching & Bonding

- *Etching & Bonding*

  » Moisture control is very important when etching, sealing and bonding. Bleeding is controlled with electrocautery. Water, saliva and residual blood are removed with high power suction (*Figs. 15 and 16*).

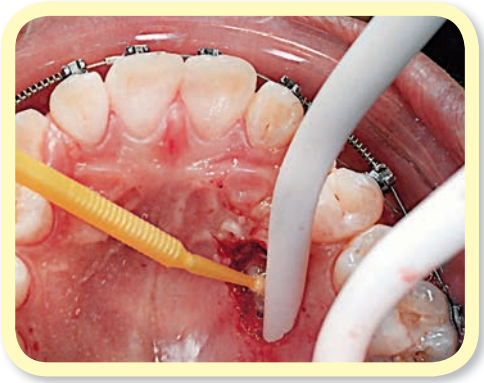


Fig. 16:
After the etched surface is rinsed and dried, the sealant is applied with a yellow brush.

6. Indentation

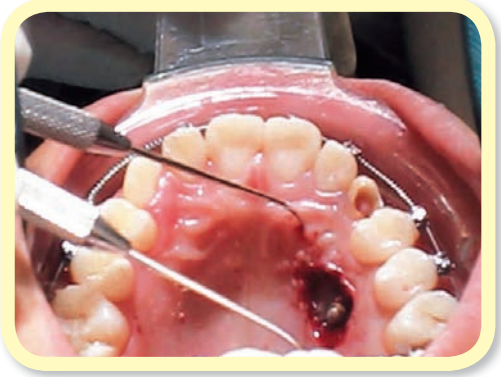


Fig. 17:
After the button was bonded on the crown of the impacted canine, the position for the miniscrew was marked by penetrating the soft tissue in the rugae area with an explorer.

- *Bond a button on the crown portion of the impacted canine.*
- *Make an indentation in the rugae area where the miniscrew will be inserted.*

7. Screws Insertion

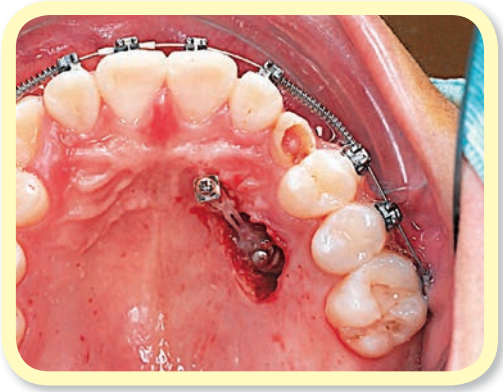


Fig. 18:
Traction is applied with a power chain to upright the canine, and a coil spring is used to open space in the arch for the impaction.

- *A miniscrew is inserted mesial to the impaction.*
- *An elastic power chain is attached from the button on the impaction to the miniscrew.*

  » The miniscrew is placed on the mesial surface to upright the impacted canine with an elastic power chain. This force system provides direct traction to upright the impaction without deleterious side effects on the rest of the dentition. It is often necessary to reposition the miniscrew as the tooth is uprighted. Beware of impinging on the roots of teeth and creating occlusal interferences.[6]

Fig. 19:
Petroleum jelly is applied to the back of a glove to assist in manipulating the periodontal dressing.

- *Spread petroleum jelly on the back of a glove to coat glove fingers to prevent sticking to the periodontal dressing (COE-PAK).*[4,5]

8. COE-PAK Application

- *Coat glove finger tips with petroleum jelly from the back of the glove (Fig. 19).*
- *Cover the wound with periodontal dressing and pack it into the interdental spaces and around the miniscrew.*
- *Use wet gauze or a cotton swab to press the periodontal dressing into firm contact with the wound.*

» Packing the dressing into the interdental spaces provides retention.

» Periodontal dressing controls bleeding, enhances patient comfort, and most importantly prevents the mucosa from growing over the uncovered impaction (*open window technique*).

» Healing mucosa grows ~1mm/day which is much faster than a tooth erupts. The dressing is essential for maintaining the patency of the window until the tooth erupts through it.

» Periodontal dressing is removed three days after the surgery and the eruption of the impaction is closely monitored for ~3 weeks or until it erupts through the mucosa.

- *Extract the primary canine (Figs. 20 and 21).*

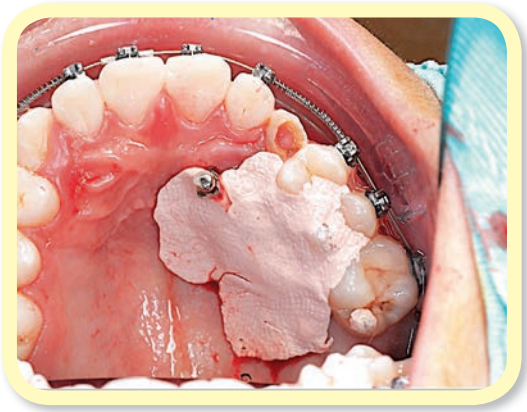


Fig. 20:
Periodontal dressing is covering the wound and the miniscrew, and the carious maxillary left deciduous cuspid is prepared for extraction.

Fig. 21:
After extraction the deciduous canine shows both extensive crown and root destruction.

Discussion

For most palatal impactions, the open window approach allows for spontaneous eruption. However, that approach is less likely to be successful for bony impactions, particularly when horizontal, deep in the alveolar process, with a dilacerated root, in an older patient, or when a miniscrew is required.[9] Deep bony impactions usually require traction for eruption (*Fig. 18*). However, the most critical issue in dealing with bony impactions in the posterior palate is avoiding damage to the greater palatine artery (*GPA*)(*Fig. 22*);[2,3] which is the terminal portion of the descending palatine artery, that is derived from the maxillary artery (*Fig. 23*). The GPA enters the palatal soft tissue through the greater palatine foramen, and provides the blood supply for the gingiva and mucosa of the posterior palate (*Fig. 22*). It terminates through the incisive canal by anastomosing with the sphenopalatine artery to supply the nasal septum (*Fig. 23*). The GPA is a relatively large artery in the posterior palate that is capable of significant bleeding if severed. The surgeon must avoid any incisions that threaten the GPA. If an impaction is near the GPA, it may be best to reflect the soft tissue of the palate to expose the impaction.

Dilaceration is a developmental disturbance in the shape of a tooth, and it may affect both the deciduous and permanent dentitions.[9] The term dilaceration refers to a curvature in some aspect of a tooth. It usually involves the cervical region and/

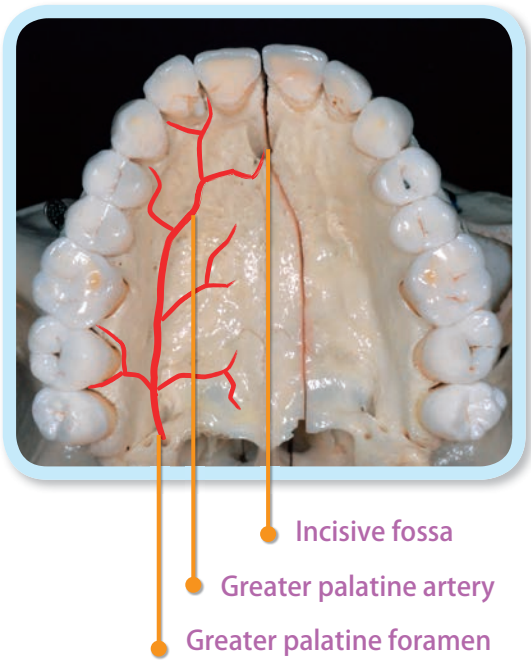


Fig. 22:
The arterial supply of the palate is drawn on a dry skull.

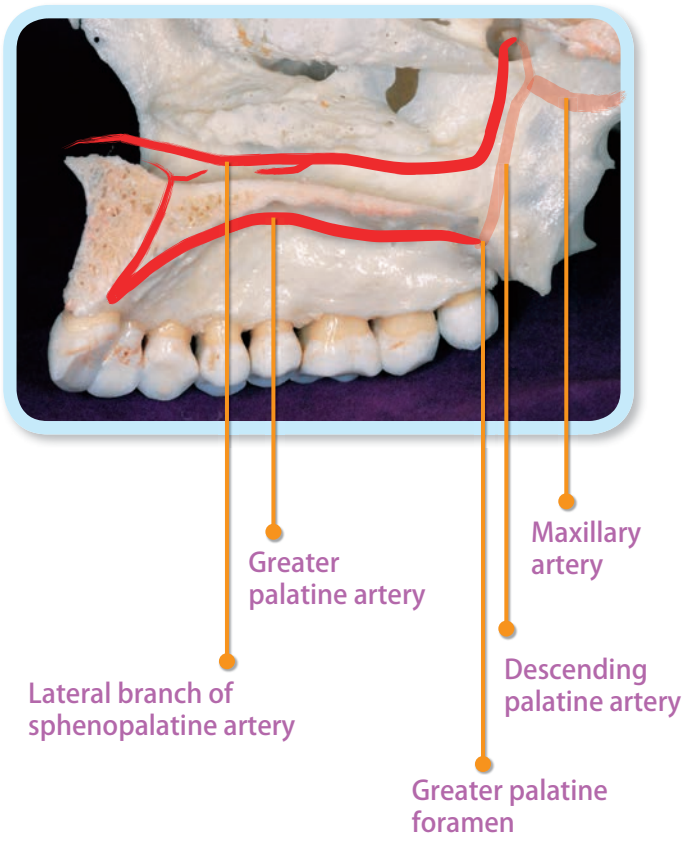


Fig. 23:
The arterial supply of the internal maxilla is drawn on a midsagittal section of a dry skull.

or the root of a tooth. If the problem is genetic, it usually also affects the same tooth on the opposite side of the arch, because the genome contains genes for only half of the body: the other half is a mirror image.[10] Isolated cases of dilaceration are usually due to trauma during tooth development or the tooth being impeded during eruption. Trauma may displace the formed portion of the tooth germ, so that the rest of the tooth forms at an abnormal angle. Eruption is such that the apical area remains at the same place while the crown moves occlusally, but if eruption is mechanically blocked, the proliferating apical area will move into different direction.[9] The ensuing distortion of root form is deemed dilaceration.

Conclusion

For many years, extraction was the recommended treatment for a dilacerated impactions, but modern technology offers new options. Conservative surgical exposure and bone screw anchorage facilitates the recovery and alignment of even severely displaced impactions. This article provides a step by step sequence (*checklist*) to assist the clinician in managing palatal impactions in a standardized manner with the open-window technique.

References

1. Kokich VG. Surgical and orthodontic management of impacted maxillary canine. Am J Orthod Dentofacial Orthop 2004;126:278-83.
2. Yeh HY, Chang CH, Roberts WE. Step-by-Step on the Open-Window Technique for Upper Palatal Impaction. Int J Orthod Implantol 2011;24:40-3.
3. Cheng J, Chang CH. Simplified open-window technique for palatally impacted cuspids. Int J Orthod Implantol 2012;25:48-52.
4. Su B, Hsu YL, Chang CH. Soft Tissue Considerations for the Management of Impactions. News & Trends in Orthodontics 2011;22:54-9.
5. Su B, Hsu YL, Chang CH, Roberts WE. Soft Tissue Considerations for the Management of Impactions. Int J Orthod Implantol 2011;24:50-59
6. Hsu YL, Chang CH, Roberts WE. OrthoBoneScrew. The dream screw for next generation's orthodontists. News & Trends in Orthodontics 2011;23:34-49.
7. Tsuyoshi S, et al. Impacted teeth in the maxilla: usefulness of 3D Dental-CT for preoperative evaluation. Eur J Radiol 2003;47:221-6.
8. Discacciati JA, de Souza EL, Costa SC, Sander HH, Barros Vde M, Vasconcellos WA. Invasive cervical resorption: etiology, diagnosis, classification and treatment. J Contemp Dent Pract 2012;13(5):723-728.
9. Proffit WR, Fields HW, Sarver DM. Contemporary Orthodontics 5th ed. 2012;3;66-91.
10. Roberts WE, Hartsfield Jr JK. Bone development and function: genetic and environmental mechanisms. Seminars in Orthodontics 2004;10(2):100-122.

Beethoven Assistant Training workshop

2015/10/29 (Tue)
2015/10/30 (Fri)
Clinical course

2015/10/31 (Sat)
Optional Keynote course

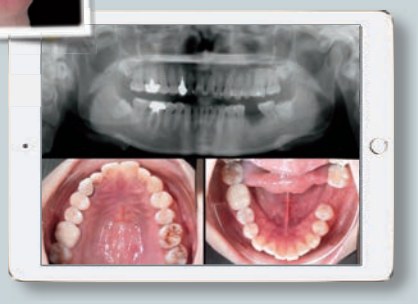
Mandarin Chinese only
課程以中文進行

Want to take excellent dental photos but never have enough time, skills or the right equipment? Having too little time to answer your patients' questions? How about training your assistants to solve your problem?

From clinical chair-side assistance to successful patient consultation and professional dental photography, this hands-on workshop will enable your assistants to acquire essential knowledge of the Damon System, and equip them with abilities to utilize popular softwares like Keynote (for patient photo filing) and Morph (for animated patient progress). Taught by Beethoven's own seasoned assistants in Dr. Chang's renowned orthodontic clinic, assistants are expected to gain practical tips in an authentic clinical setting. Don't miss out on the opportunity to experience how Beethoven's efficient clinical education system can transform your assistants.

Topic

1. Ortho assistant training	5. Pedo dental hygiene & common Q&A
2. Initial consultation	6. Animated patient progress demo: Morph
3. Clinical photography	7. Dental casting
4. Ortho dental hygiene & common Q&A	8. *Patient filing: Keynote (optional course)



Registration

A. Clinical + Keynote: Early bird discount 30% off. (by 8/30)

B. Clinical-only: Early bird discount 20% off. (by 8/30)

Email: course@newtonsa.com.tw

Newton's A Address: 2F, NO.25, Jianzhong 1st. Rd., Hsinchu, Taiwan. TEL: +886-3-573-5676

2015 新式鎳鈦

超 快 速 × 超 完 美

臨床應用與操作 × 根管充填術

根管治療寶典

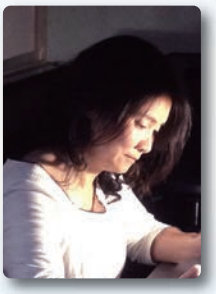
醫師：呂志明 × 林郁恆　臺北班：9 / 13 (日)

講師介紹

呂志明 醫師

- 台灣大學臨床牙醫學碩士
- 中華民國牙髓病學會專科醫師
- 前台大醫院牙髓病科兼任主治醫師
- 前台大醫院牙科代訓醫師
- 前亞東醫院主治醫師

林郁恆 醫師



- 美國俄亥俄州凱斯西儲大學碩士及牙髓病專科訓練
- 中華民國牙髓病學會專科醫師
- 美國牙髓病學會專科醫師

(Diplomate, American Board of Endodontics)

課程內容介紹

SHAPING

在不久的將來，汽車人性化的自動煞車與倒車系統，將成為購買汽車時的首選配備，用路人行車安全也將大大的提升！反觀，牙科臨床根管治療中的病人安全在哪裡？過去360度連續旋轉的鎳鈦旋轉器械，讓牙醫師們減少了根管的修形的時間，但是卻也產生了層出不窮的斷離器械與偏移修形的意外！牙醫師能像汽車駕駛人一樣，有全新人工智慧的鎳鈦旋轉器械可以使用嗎？不再受限制式的"Reciprocating motion - TF Adaptive system" 正是符合我們需求的好幫手，當遇到過大阻力就自動偵測，然後反轉進行逆時鐘方向的切削，"Rotary when you want it, Reciprocation when you need it"，如此人性化的設計，是否也想體驗TFA的神奇魔力了嗎？

OBTURATION

新式的熱塑馬來膠根管封填技術有很多的優點：穩定性強、精確度高；可達到根尖0.5mm左右且封閉性好，側根管也能緻密的封填。因此熱塑馬來膠根管封填技術已成為今後根管治療發展的方向。然而熱充填技術的步驟非常複雜繁瑣、十分耗時。林郁恆醫師，將利用最新式的機器，以最精準的技術及最簡化的方式，帶領您達成根管封填最完美的結果。

Axis|SybronEndo

SCHEDULE

- 09:00 – 10:30 Lecture
- 10:30 – 10:50 Coffee Break
- 10:50 – 12:30 Lecture/Hands-On
- 12:30 – 13:30 Lunch
- 13:30 – 15:00 Lecture
- 15:00 – 15:20 Coffee Break
- 15:20 – 16:30 Lecture/Hands-On
- 16:30 – 17:00 Discussion

報名資訊

主辦單位
臺灣楓城牙醫學會

協辦單位
湧傑企業股份有限公司

時間
2015年
臺北班：9/13 (日)

報名專線
台北：02-2778-8315
分機131林's / 124王's

費用
NT$ 2500元，報名繳費參加
贈 TF Adaptive Small Procedure Pack 一盒

報名方式
1. 電話報名 2. 並於三日內劃撥，始完成報名
名額有限，請先電洽，滿額即不再接受報名
戶名：湧傑企業股份有限公司
郵政劃撥帳號：17471807 (於通訊欄註明報名場次)
參加者發給繼續教育學分 (紙本學分證明100元)
活動備茶點及午餐，素食請先告知

上課地點
台北 - 2015/09/13(日) 09:00-17:00
犇亞國際會議中心 - BB教室
台北市松山區復興北路99號15樓
捷運文湖線-南京復興站旁

*人數到達10人才開班
*報名未出席者，恕不退回既收款項

OrthoBoneScrew Super Set

Created by Dr. Chris Chang, OrthoBoneScrew(OBS) is made of medical grade, stainless steel and is highly praised by doctors for its simplistic design, low failure rate and excellent quality. Beethoven's OBS super set is your must-have secret weapon to provide a consistent traction force in a minimally invasive approach.

Smooth Mushroom Head
For comfort & retention of elastic chain

4-way Rectangular Holes
For lever arm to solve impacted tooth

Double Neck Design
Easy hygiene control & extra attachment

Screw Type	
1.5	1.5x8mm
2.0	2.0x12mm
2.7	2.0x14mm with holes

Chris Chang
Founder and Inventor

Newton's A
E-mail: info@newtonsa.com.tw
http://www.orthobonescrew.com

Double Retractors

Double Retractors x2, Black Board x2

The double-end design creates an extended handle and allows for firm grasp. The new and improved material is more durable and resilient. The light shape provides the most esthetic aid in intra-oral photography.

Stainless Steel Mirror

Size : L (Recommanded), M, S

Strong, durable stainless steel, autoclave-proof, the specially designed size, shape and thickness ensure maximum intra-oral view without sacrificing patient comfort.

Bite Turbo 2.0

Handle x1, BT molds x6, BT longer molds x6, Button molds x6

A simple but power set of tools to correct severe deep bite and cross efficiently. The bite turbos and lingual button molds, made with silicon and filled with flowable resin, can be reused and adjusted depending on treatment progress. The longer one allows you to solve all kinds of deep bite and large horizontal overjet.

Newton's A E-mail: info@newtonsa.com.tw
http://www.orthobonescrew.com

Feedback from the 2015 Beethoven International Workshop

It was in a Damon Meeting in Buenos Aires in 2014 when I first learned about this workshop. Dr. Chang's lecture really inspired me so I registered right away, and had since been preparing and expecting for this journey to come. It was like a dream come true! Everything throughout the workshop was perfect and beyond expectations. Dr. Chris shared his knowledges in details and made the difficult cases look simple. The efficiency of his team who work in perfect harmony in clinic was amazing!

I want to thank Dr. Chris for opening the doors of his home, his clinic, and his heart. So selfless that encourages me to do things better every day. I also thank God for this unforgettable workshop and I wholeheartedly recommend it to my colleagues. If you ever wanted to take the course, do not hesitate to do it! It is an honor to join this great family and thank you, Dr. Chris, for everything!

Dr. Lee Hye Jin Serena
Argentina

The workshop was well organized. Dr. Chris, his wife, Shufen and his entire team were warm and friendly and it made our whole experience there very comfortable.

It was indeed a pleasure to see the master at work and exciting to learn how meticulously things are planned and arranged to make him say "it's easy". OBS, the Vista technique and the Keynote workshop, all and all was an wholesome experience and I would definitely recommend this course to my friends who would like to look at things from a different perspective. I had four wonderful days there, enjoying the lovely food and making some great friends!!!

As a final word I would like to say that getting to spend time with such dedicated, knowledgable and lovely group of people is in itself a blessing.

Dr. Sunish T Daniel
Dubai

From left to right: Mrs. Chang, Drs. John Lin, David Freitas Matos, Paulo Fernando Retto, Chris Chang

It is with great pride that I incorporate Drs. Chang and Lin's names as "Newcomers" in "My Pantheon of Mentors". As a firm believer of Angle's philosophy, I am sure that Dr. Angle would be glad to know that contemporary orthodontics has a professional as Chris Chang! When his non-surgical approach for extreme borderline cases demonstrates success in adults, it is time for a paradigm shift. His genius is beyond his time, and any orthodontic post-graduation course must incorporate his treatment strategy.

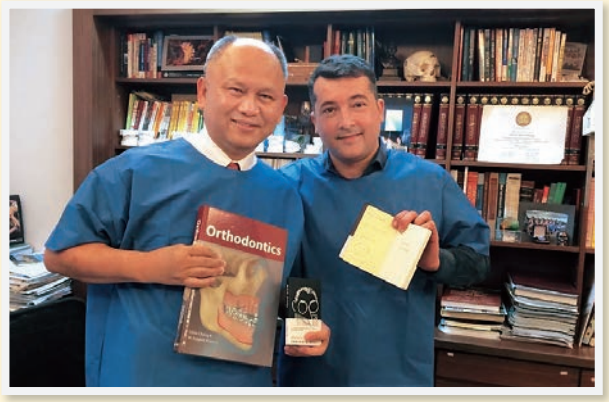
Something is only impossible until someone else proves otherwise, said Albert Einstein; in modern days orthodontics that someone else has a name, Chris Chang.

Prof. Dr. Paulo Fernandes Retto
Lisbon, Portugal

I have followed Dr. Chris Chang's lectured on the use of OrthoBoneScrews around the world. I was very excited to come to Taiwan to visit Dr. Chang's clinics and watch him at work.

I learned a great deal from the lectures and workshops. The insight into Dr. Chang's personal views and his philosophies of life and work was truly inspirational. I am grateful for the chance to apply what I have learned to my patients and hope to achieve a whole new level of treatment for them.

Joanna Lim
Singapore



About the chair side observation, it was an unparalleled experience. Dr. Chang's knowledge and creativity are astonishingly vast and makes a huge difference in the orthodontic practice. He is a great orthodontist and I feel lucky for having this amazing experience.

José Roberto Pereira
Canada

獎學金學員心得回饋

三天下來真的很感謝貝多芬矯正中心讓我能夠有這樣難得的機會，在張醫師病人超多，步調超快的診所裡見習，了解大規模的矯正中心如何高效率地運作，同時聆聽張醫師世界級的演講，著實令人感到讚嘆。

葛元楷 台北醫學大學

這次見習的經驗，開啟了我對矯正更大的視野，見識到矯正可以跟其他科結合的那麼好，

可以做到這麼大的規模，如此的專業又有效率。同時，也看到了診所的經營模式，良好的助理訓練，讓醫師能夠非常專心且有效率的進行治療。

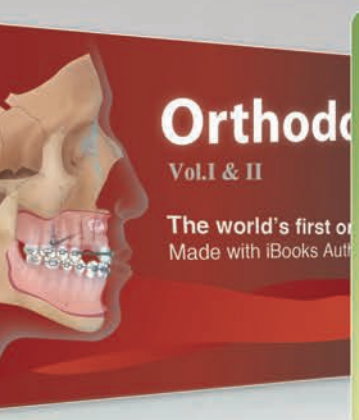
整個診所的步調都非常快速、有效率，但又不會感覺到很急躁、混亂，把節奏抓得很好。

蔡宜臻 台北醫學大學

這三天的課程和診所參觀，真的讓我非常開心和滿足！除了震懾於矯正科學的創意想法與技術上的革新，張醫師精益求精的精神更讓我心裡有一番衝擊，真的非常謝謝張醫師願意如此大方且熱情的和我們分享他豐富的學習經歷與人生理念，能夠親自參觀並了解張醫師對病人的重視、學習如何用最簡單的方式進行誠懇的溝通，我想這是未來身為牙醫最珍貴和重要的收穫！一次旅行就足以改變一個人生，以往曾思考一位為病人著想的好牙醫是否會因為現實因素受到限制，很高興這幾天不論是學術演講、診所觀摩，我看見了一位好牙醫的最佳典範！

植牙論壇也是我覺得很特別的經驗，不難發現每位台上的演講者都非常用心的整理繁多且複雜的學術內容，最令我佩服的是他們都做到了深入淺出，讓投影片發揮最大的理解效果，一眼就能看到重點，討論方式也生動有趣，這樣的演講竟然是不專心也難，真的很精彩！這樣的呈現與報告方式真的值得我學習，也因受益良多而感到開心！

陳芝然 台北醫學大學



BDE

Beethoven Dental Encyclopedia

Limited Free

The most Completed dentist database in the world

App of the Best

BDE – Beethoven Dental Encyclopedia

Limited Free

Beethoven Dental Encyclopedia offers professional orthodontic and implant video courses. Members can watch the latest dentistry treatment, at their own pace, from the comfort of their home. All courses are instructed by world famous speaker, Dr. Chris Chang. This step-by-step practical course will make your learning an informative and fun experience. You can also have access to International Journal of Orthodontics and Implantology from the App.

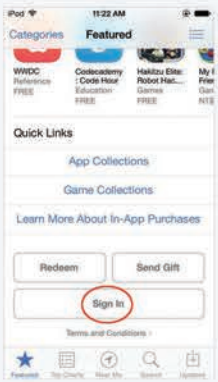
+ Free App

This app is designed for iPad, iPhone and iPod touch

Available on the App Store

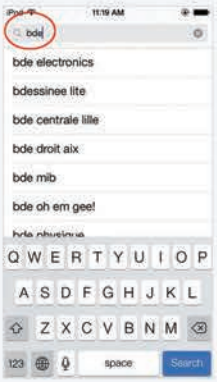
Manual – Step by Step

1. Go to App Store on your device.

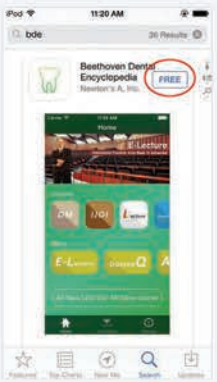


2. "Sign in" with your Apple ID.

3. "Create Apple ID" if you don't have one.

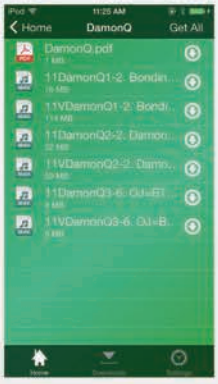


4. Search for "BDE."



5. Click "FREE."

6. Click "INSTALL APP."



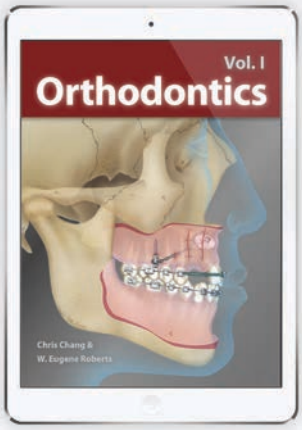
7. Once downloaded, click "BDE" to launch the app.

If you are interested in our paid video or medical products, contact **app@newtonsa.com.tw** for more information.

http://www.orthobonescrew.com
E-mail: app@newtonsa.com.tw TEL : 03-5735676

Newton's A

e-Book of the Best



+ BUY BOOK

This book requires iBooks 3.0 or later and iOS 5.0 or later.

Beethoven Dental Encyclopedia

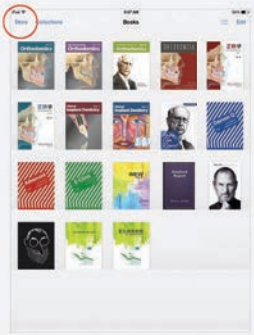
e-Books collection

Beethoven Orthodontic and Implant Group has published the International Journal of Orthodontics and Implantology since 2007. This Journal features excellently finished case reports evaluated by objective grading systems. The Orthodontics and Implant Dentistry eBook series is a special selection of exciting cases with interactive functions and multimedia resource. Once opening this book, your understanding of dentistry will never be the same!

Available on the iBookstore

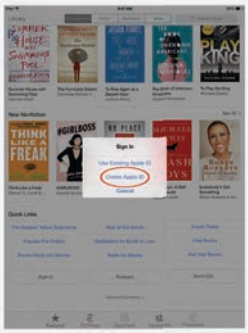
Manual – Step by Step

1. Launch "iBooks" app on your iPad.

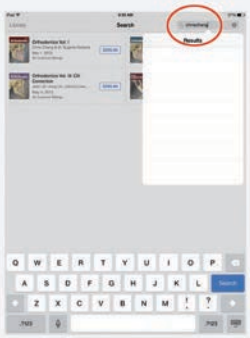


2. Click "Store."

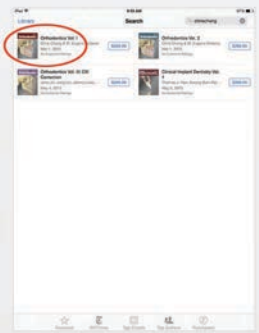
3. "Sign in" with your Apple ID.



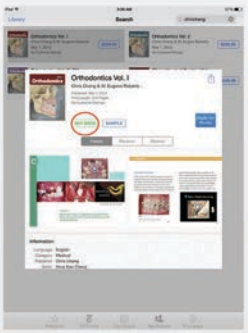
4. "Create Apple ID" if you don't have one.



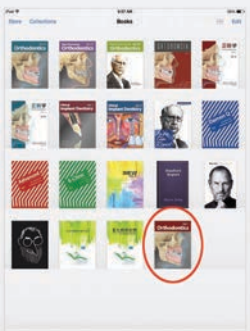
5. Search for "chrischang."



6. Click the book's icon.



7. Check the price and click "BUY BOOK."



8. Once downloaded, click the book's icon to launch the e-book and enjoy the awesome content!

If you have any question, or are interested in our medical products, contact **app@newtonsa.com.tw** for more information.

http://www.orthobonescrew.com
E-mail: app@newtonsa.com.tw TEL : +886-3-5735676

Newton's A

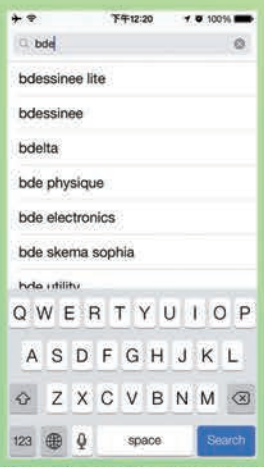
Limited Free

BDE

Beethoven Dental Encyclopedia

The most completed dentist database in the world

BDE offers professional orthodontic and implant video courses. Members can watch the latest dentistry treatment from the comfort of their home. All courses are instructed by Dr. Chris Chang. This step-by-step practical course will make your learning an informative and fun experience. You can also have access to International Journal of Orthodontics and Implantology from the App.



1. Go to App Store, search for "BDE" and install the app.

2. Launch the app and enjoy the videos!

With your personal account, you can watch the courses (streaming video) online on your iPad and iPhone without occupying your storage.

You can also download the video to your iPad and iPhone. This allows you to watch your saved files anywhere anytime.

BDE

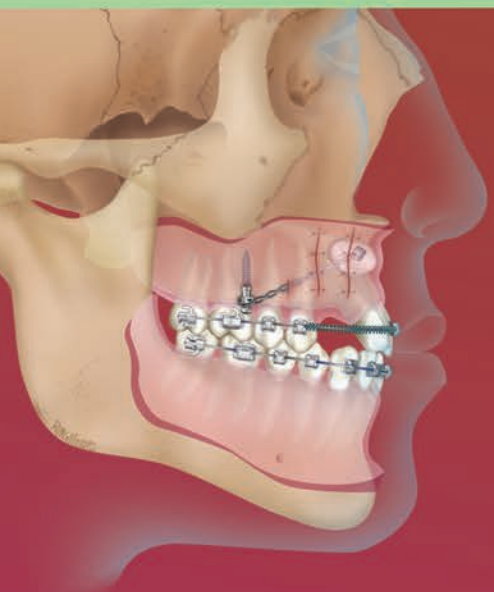
Available on the iPhone App Store

Go to **http://iaoi.pro** for more latest videos.

E-mail: app@newtonsa.com.tw

TEL : +886-3-5735676

Newton's A



e-Book

The world's best

Dental e-Textbook

Made by iBooks Author

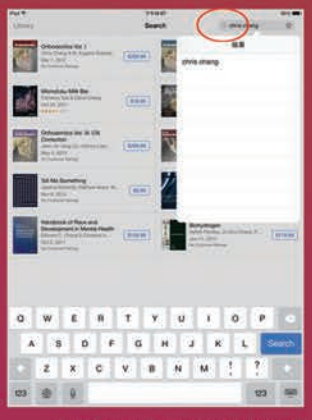
Beethoven Orthodontic and Implant Group has published the International Journal of Orthodontics and Implantology since 2007. This Journal features excellently finished case reports evaluated by objective grading systems. The Orthodontics and Implant Dentistry eBook series is a special selection of exciting cases with interactive functions and multimedia resource. Once opening this book, your understanding of dentistry will never be the same!

Orthodontics Series

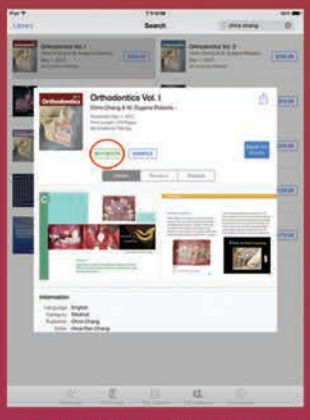
Implant Dentistry Series

Available on the iBookstore

chris chang



1. Search for "chris chang" in iBookstore.



2. Check the price and click "BUY BOOK."

矯正植體課程

2015/11/06 (五)
09:00~20:00

OBS In-office Workshop

講解矯正植體操作的時機、方法
診所臨床跟診及實例示範

牙醫師不敢或是不知如何植入 miniscrews，大抵有兩個原因：一是無法突破心理障礙；另一則是認為操作困難。然而，張醫師透過高效率的課程講授，直接切入重點，使您輕鬆掌握；簡潔的步驟，讓您不再求助牙周或口外醫師。百聞不如一「做」，相信短短一天的課程，您將親身見證！

- 購買OBS超值組贈 2000元課程折價券，可折抵本課程費用。

全方位牙醫診所
王肖龍醫師

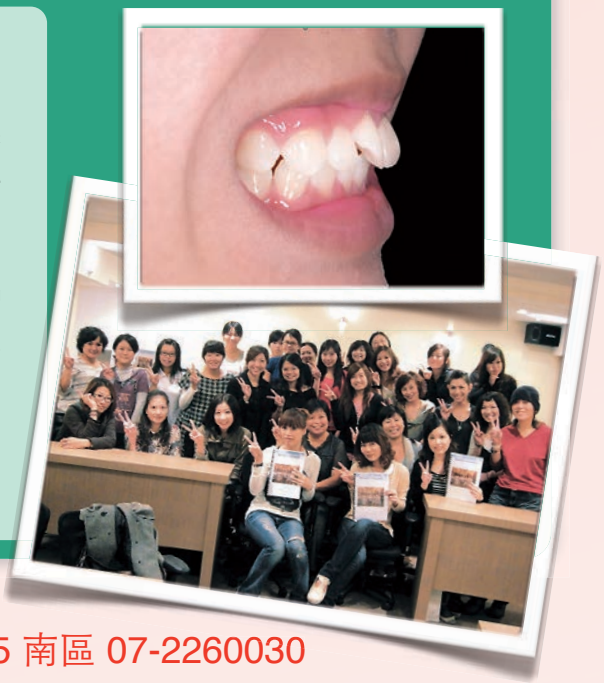
助理訓練課程

2015/10/02 (五)
2015/10/16 (五)

1. 高效矯正助理訓練	4. Keynote 製作
2. 新病人流程	5. 矯正期間衛教
3. 照相技巧	6. Morph 製作

針對矯正助理的臨床技巧、電腦操作，包含照相、X光拍攝、Damon 系統相關知識介紹，以及牙科電腦應用，例如衛教檔案製作、Morph 病例以及 Keynote 病例製作教學。結合課堂講解與診間實習雙重方式，幫助您快速培養出得力矯正助理。此外，本期課程新增 iPad 在診間的應用，讓您的助理可以善用科技，為病人創造理想就診經驗。

- 三人以上團報享9折優惠。



報名專線：湧傑 北區02-27788315 中區 04-23058915 南區 07-2260030

Newton's A 金牛頓藝術科技

地址：新竹市建中一路25號2樓 電話：03-573-5676

Chris Chang, DDS, PhD

Learn fast, Save big!

Ortho combo

-Damon Q
-Advanced
-OrthoBoneScrew

-Excellent Finishing

From beginners to advanced clinicians, Dr. Chris Chang will share everything you need to know about the combined use of the latest Damon system and orthodontic bone screws in just 78 sessions.

Voiced version in Chinese

E-Clinic combo

-E-consultation:
Ortho, Pedo, Implant
-Assistant

Want to stand out in the fierce competition of private practice? The combo features the assistant training program you always dream of as well as informative patient consultation materials. All is ready to be used in your clinic today!

Voiced version in Chinese

NEW Implant combo

-Implant Forum
(Voiced in Chinese)

44 sessions of clinical discussions on the most current and practical topics in implant dentistry, facilitated by Dr. Chris Chang.

Voiced version in Chinese Only

Awesome combo O E

Chinese-version combo O E I

Buy O & E get E-Lecture for Free

awesome Packages!!

http://www.orthobonescrew.com
E-mail: course@newtonsa.com.tw

TEL : +886-3-5735676 Newton's A

貝多芬牙醫視訊百科全書

Learn anytime, anywhere!

矯正研習包

由矯正名師張慧男醫師深入淺出的生動教學，讓您在短短78堂課的課程裡，完全掌握結合最新的矯正系統Damon以及矯正骨釘OBS的實用治療秘訣。無論是矯正新手或是想要持續進修的專科醫師都不可錯過！

- 矯正基礎 Damon Q
- 矯正進階 Advanced
- 矯正植體 OrthoBoneScrew

- 矯正精修 Finishing I（Topic 01-11）
- 矯正精修 Finishing II（Topic 12-22）
- 矯正精修 Finishing III（Topic 23-33）
- 矯正精修 Finishing IV（Topic 34-44）
- 矯正精修 Finishing V（Topic 45-55） New

終身會員

植牙精進包

由矯正名師張慧男醫師主持，邀集國內外植牙講師，整理當前植牙的熱門主題，透過55堂課的專題演講和個案分析，讓您在植牙學習之路上不斷精進！

- 植牙論壇 Implant Forum I（Topic 01-11）
- 植牙論壇 Implant Forum II（Topic 12-22）
- 植牙論壇 Implant Forum III（Topic 23-33）
- 植牙論壇 Implant Forum IV（Topic 34-44）
- 植牙論壇 Implant Forum V（Topic 45-55） New

診所行銷包

還在苦於不知如何利用科技行銷診所特色？推廣專業服務？透過系統化的助理訓練課程，囊括「矯正」、「植牙」、「兒童牙科」結合三領域的案例解說和衛教示範，讓您輕鬆運用iPad科技行銷您的專業診所！

- 衛教示範病例 E-consultation: Ortho, Pedo, Implant
- 助理訓練 Assistant

New

E化病例衛教電子書

awesome packages

終身會員 享好康"

凡2008年起
曾購買任一系列貝多芬視訊課程
皆可享有右側優惠

- **免費更新**課程，包含 E-Consultation矯正衛教篇皆有全新有聲檔可供免費更新。（不含精修VF、植牙論壇VIF）
- **無聲升有聲**：凡單購無聲視訊課程，皆可付些微差額，升級最新有聲課程。
- 免費安裝矯正植牙國際 **電子期刊**
- **iOS系統健檢**

請洽 金牛頓 (03)573-5676

http://www.orthobonescrew.com

Newton's A 新竹市建中一路25號2樓

B-201209 1020-0000

"From this book we can gain a detailed understanding of how to utilize this ABO system for case review and these challenging clinical cases from start to finish."

Dr. John JJ Lin, Taipei, Taiwan

"I'm very excited about it. I hope I can contribute to this e-book in someway."

Dr. Tom Pitts, Reno, Nevadav, USA

"A great idea! The future of textbooks will go this way." *Dr. Javier. Prieto, Segovia, Spain*

No other book has orthodontic information with the latest techniques in treatment that can be seen in 3D format using iBooks Author. It's by far the best ever.

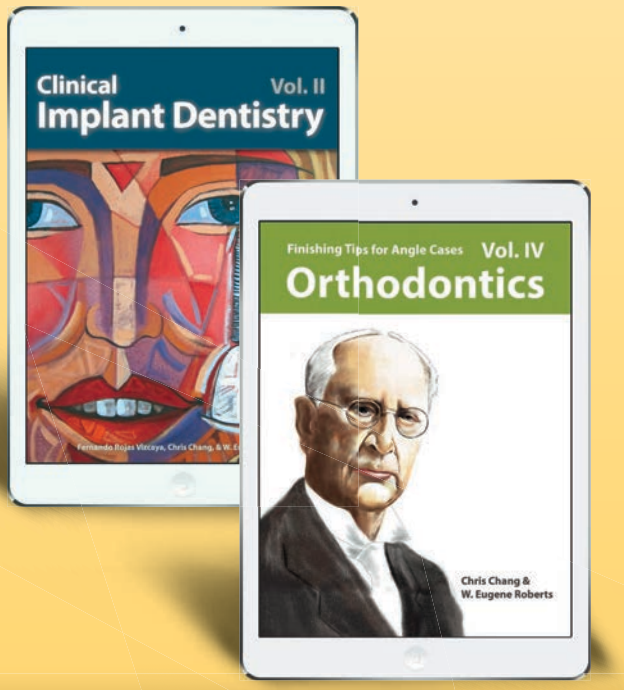
Dr. Don Drake, South Dakota, USA

"Chris Chang's genius and inspiration challenges all of us in the profession to strive for excellence, as we see him routinely achieve the impossible." *Dr. Ron Bellohusen, New York, USA*

This method of learning is quantum leap forward. My students at Oklahoma University will benefit greatly from Chris Chang's genius. *Dr. Mike Steffen, Oklahoma, USA*

"Dr. Chris Chang's innovation eBook is at the cutting edge of Orthodontic Technology... very exciting! " *Dr. Doraida Abramowitz, Florida, USA*

"Dr. Chang's technique is absolutely amazing and cutting-edge. Anybody who wants to be a top-tiered orthodontist MUST incorporate Dr. Chris Chang's technique into his/her practice." *Robert S Chen, California, USA*



"Dr. Chris Chang's first interactive digital textbook is ground breaking and truly brilliant! "

Dr. John Freeman, California, USA

"Tremendous educational innovation by a great orthodontist, teacher and friend."

Dr. Keyes Townsend Jr, Colorado, USA

"I am awed by your brilliance in simplifying a complex problem."

Dr. Jerry Watanabe, California, USA

"Just brilliant, amazing! Thank you for the contribution."

Dr. Errol Yim, Hawaii, USA

"Beyond incredible! A more effective way of learning." *Dr. James Morrish Jr, Florida, USA*

22nd Beethoven international workshop in June, 2015. Participants took photo with Dr. John Lin (Center right) and Dr. Chris Chang (Center left).

ISSN 2079-6862